

# THE POLAR TIMES



*Fur seals on St. Paul Island, Alaska. Big bulls preside over harems of females and pups, while "bachelors" (top left) watch from the distance*



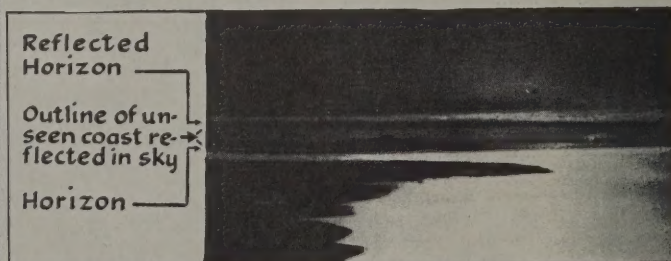


## Scientists Report Findings

In Philadelphia for the autumn meeting of the American Philosophical Society are S. Whittemore Boggs, geographer for the State Department; Dr. F. Alton Wade, professor of geology at Miami University, and Dr. Paul A. Siple, geographer of last year's Antarctic Expedition, shown (left to right) with a bust of Elisha Kent Kane, a member of the famed Grinnell Expedition.



Paul A. Siple (left), leader and chief geographer of the United States Antarctic Service, based at Little America, and F. Alton Wade (right), geologist from Miami (O.) University, show Roland S. Morris, president of the Philosophical Society, slides made on last year's Antarctic expedition.



Chas. Shirley, U.S. Antarctic Expedition  
UNSEEN ANTARCTIC BAYS REFLECTED IN THE SKY  
*The land below the horizon can now be mapped.*



# The Polar Times

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## THE AUTUMN GENERAL MEETING OF THE AMERICAN PHILOSOPHICAL SOCIETY, NOVEMBER 21-22, 1941

By Dr. EDWIN G. CONKLIN

VICE-PRESIDENT AND EXECUTIVE OFFICER

The Autumn General Meeting for 1941 was held in the Hall of the Society on Independence Square on November 21 and 22. About one hundred and ten (110) members and especially invited guests were present and registered in addition to an unknown number of persons who were present but did not register. The program of the first day of the meeting consisted of reports on the scientific results of the United States Antarctic Expedition of 1939-1941. In the main these were the first detailed reports of this latest expedition to Antarctica, which was probably better organized for scientific work than any previous expedition. Thanks are due to all who took part in this program, and especially to Dr. Serge A. Korff, who was largely responsible for its organization. Brief abstracts of these reports follow:

F. Alton Wade, senior scientist, U. S. Antarctic Service. An Introduction to the Symposium on Scientific Results of the United States Antarctic Expedition, 1939-41.

One of the primary purposes of the United States Antarctic Service Expedition, 1939-1941, was to carry on a comprehensive program of scientific observations and research. Through the cooperation of many of the world's leading scientists such a program was planned. A good portion of the program was carried to completion by the twenty-one members of the scientific staff. Due to extenuating circumstances and an unexpected termination of the expedition, some phases were only partially completed. Detailed observations were made and programs of research were conducted in the following fields: Auroral phenomena, bacteriology, botany, cosmic ray, glaciology, magnetism, medicine, meteorology, micropaleontology, ornithology, petrography and petrology, physiography, physiology, radio, seismology, structural geology and zoology. A few of the reports have been completed, others are nearing completion and some will not be ready for publication for months. In addition to the work as summarized in this symposium, there are to be published many more reports. Among them may be listed the following: Observations and height determinations of the Aurora Australis. The physiographic feature of the Ross Shelf Ice. The geology of the Weddell Coast of Palmer Peninsula south of 68°. The geological features and formations in the vicinity of East Base. The sedimentary rocks of the Edsel Ford Mountains. The petrography and structure of the Rockefeller Mountains. Ornithology Report; this will include observations of bird life at both bases, at the Melchior Islands and along the ships' routes. The petrography and structure of the Melchior Islands. A correlation of radio receiving and transmitting conditions with magnetic phenomena and auroral displays.

F. Alton Wade. The Physical Aspects of Shelf Ice.

The first detailed investigations of shelf ice were made at West Base during 1940. Included in the program were the following: the variation of the density of the firn with

depth, sub-surface temperature measurements to a depth of forty-one meters, variations in the snow surface level over a period of eleven months, horizontal and vertical movements within the firn, variations in the size of the constituent grains in various zones, stratification and horizontal banding. The methods used are discussed and the apparatus is described. The results are presented in tabular and graphic forms. Comparisons are made with the results as obtained from investigations of the physical aspects of other types of glaciers; namely, valley glaciers and the Greenland Ice Cap. The lack of summer melt-water in the Ross Shelf Ice eliminated what had been considered the most important factor in the process of firnification. However, without the aid of melt-water the process does proceed with much the same results. An explanation of the firnification process in regions where the air temperature seldom rises above freezing is advanced.

Paul A. Siple, geographer and leader, West Base. Geographical Discoveries from West Base.

Geographical exploration was carried on from West Base in 1940 by means of five reconnaissance field parties, and two aircraft. The routes used followed but extended considerably beyond those opened first by the Byrd Expeditions 1929 and 1934. The field parties' operations were limited to the hinter coastal mountains east of Little America from longitude 164° west to longitude 136° west. The parties were occupied mainly with surveying, geology, biology and meteorology. Aerial reconnaissance and surveying extended eastward to longitude 120° west including the major land features to nearly 200 miles south of the coast. This was accomplished by six flights making more than 1,000 usable aerial survey photographs available of the area. Exploration to the west of Little America included three major flights over previously explored portions of the Ross Ice Shelf crossing in each case into meridians of east longitude in the vicinity of latitude 78° 30'; 79° 20'; 81°; 83°; and 84°. Four newly discovered areas of internal disturbance were studied and 15 bays and inlets were photographed in the continuous aerial survey of about 400 miles of barrier face from an altitude of 7,000 feet. Southern exploratory operations were confined mainly to filling in the gap of mountains in the Austral Cordillera between Beardmore and Live Glaciers. However, the character of land formations east to the 120th meridian west indicated no sea level connections between the Ross and Weddell Seas. Other geographical accomplishments included glacial studies of the formation and physiography of shelf ice; problems of human adaptation to the climate of Antarctica and studies of the cooling power of the wind.

Lawrence A. Warner, Department of Geology, the Johns Hopkins University. Geological Structure and Petrography of the Edsel Ford Ranges, Marie Byrd Land, Antarctica.

The portion of the Edsel Ford Ranges investigation by the geological party of the U. S. Antarctic Expedition lies between longitudes 143° 30' and 145° 30' W and latitudes 76° 50' and 77° 15' S and comprises a total

## PICTURES PLANES IN ARCTIC FIGHTS

### Stefansson Tells Philosophical Society Decisive Battles May Be Waged Over Pole

By WILLIAM L. LAURENCE

PHILADELPHIA, Nov. 21—A possibility that some of the decisive aerial battles of the war may be fought by long-range bombers high above the white Arctic wilderness by the light of the midday moon and the midnight sun was visioned tonight by Vilhjalmur Stefansson, Arctic explorer, in an address at the annual Autumn meeting of the American Philosophical Society.

The skies north of the Arctic Circle, Mr. Stefansson said, possess great military potentialities hitherto not realized by aviation experts. Next to the tropics, he said, the Arctic is the best flying zone on this planet.

The temperate zone, and particularly the northern half of that zone, where most air battles are being fought, he declared, is the poorest of all zones from the point of view of flying conditions.

The northern skies above the Arctic, Mr. Stefansson went on, would provide the United States with an excellent short cut to the battlefields of Europe and also of Asia, particularly in winter. Similarly, the Arctic sky may serve as our first line of defense against attempts by long-range bombers from Europe or Asia to reach our shores.

### Short Cut for Attack Stressed

Nearly all the world's military powers, Mr. Stefansson said, extend far north on the globe. To all of them the Arctic offers a short cut for attack on other great powers. This short cut, he said, is likely to become alluring as soon as long-range highly armored planes are produced in large quantities.

The best months for flying in the Arctic, he stated, are February to April, when conditions for flying in the northern half of the Temperate Zone are not favorable, because of poor visibility and the danger of ice-formation on the wings. Ice forms, he said, when the air contains moisture ready to freeze, whereas the air in the Arctic contains scarcely any moisture. Similarly, there is much less foggy weather in the Arctic.

Another important advantage in visibility, Mr. Stefansson stated. In addition to the midnight sun, there is a midday and a midnight moon,



every month. There are fifteen days at the North Pole when the moon is above the horizon all the time. Farther south in the Arctic circle there is much more moonlight than in the Temperate Zone. The light of the moon is bright enough for landings and take-offs, at least ten days in each month, he said.

In the latitude of Murmansk, Russia, he added, the moon is above the horizon for three days each month and is visible most of the night for several more nights.

Reflection from the snow, he said, makes moonlight in the Arctic twice as effective as in other zones. The light of the half-moon in the Arctic, he stated, will make visible a mountain a hundred miles away and is bright enough for playing baseball as well as for aerial combat.

The Arctic Winter is a favorable time for ground troops and particularly for tanks, especially heavy tanks. The heavier the tanks the better they can move over the frozen Arctic lakes and snows, he added.

Wherever there is Arctic land, Mr. Stefansson said, there are "an incredible number" of lakes. In the Winter, he said, virtually all these lakes are at all times "perfect landing fields," more level than the fields at airdromes. Planes can land either on wheels or on skis. In the Summer, on the other hand, the large number of lakes would offer convenient landing places for seaplanes.

#### Winter and Summer Contrasted

Tanks and guns, and other mechanized equipment could not move on land in the Arctic Circle in Summer, Mr. Stefansson added. The forests are impenetrable and the grounds are dotted with too many lakes. That is why, he explained, Russia opened its campaign against Finland in the Winter. The only mistake Russia made, he stated, was in miscalculating the time when the ice would be thick enough to support equipment.

September and October, he said, are the worst for Arctic flying.

The climate in the Arctic, Mr. Stefansson added, would favor the more heavily mechanized army in the Winter. Defenders of almost any Arctic terrain, he said, would have the advantage even against superior forces. On the other hand, if the Arctic frontiers were not defended, the great rivers such as the Mackenzie and the Yukon, would form great highways for ready inland marches.

#### Balchen Named Captain In U. S. Army Air Force

WASHINGTON, Sept. 5 (AP)—Bernt Balchen has been appointed a captain in the specialist reserve of the Army Air Force, the War Department announced today. He was assigned to duty in the air war plans division. The department emphasized that Mr. Balchen had had much experience in flying over ice and snow, and indicated that he would advise on air operations in cold regions.

area of about 700 square miles. The Raymond Fosdick Mountains, immediately to the north, were investigated by a party of biologists who submitted their geological notes and specimens for investigation. Thus, reconnaissance data are available for the major portion of the Edsel Ford Ranges. The oldest outcropping rocks in the area are slightly metamorphosed sediments which consist of a remarkably uniform series of dark shales and sandstones, the total thickness of which is at least 15,000 feet. Since no fossils were found, the geological age of the series is not known. The sediments are intruded by a granitic batholith, the major axis of which appears to run roughly N-S. The major sedimentary ranges comprise a broad syncline, the axis of which trends E-W and plunges down the west flank of the batholith. Exposed contacts between granite and sediments are for the most part sharp and concordant. Dikes and linear masses of igneous material, ranging in composition from alaskite to dolerite are intrusive into the granite and sediments. These are thought to represent differentiates of the granitic magma. The region as a whole is broken by faults, along one of which there is a horizontal displacement of over a thousand feet. The strikes of the dikes and faults appear to be symmetrical to the major structures in the granite and sediments. Of relatively recent origin are basaltic lava flows which seem to be confined to a small area in the Raymond Fosdick Mountains. The major geological problems of the area are concerned with: (1) The age of the sediments and the climatic and geographic conditions under which they were deposited. (2) The mode of emplacement of the igneous bodies and the relation of the intrusives to the deformation of the area. (3) The paucity of ore deposition and pegmatization. A critical analysis of the field evidence and detailed petrographic studies in the laboratory are now in progress in the hope of shedding light on these problems.

H. G. Dorsey, Jr., U. S. Weather Bureau. An Antarctic Mountain Weather Station.

The meteorological program at the East Base of the U. S. Antarctic Expedition was featured by the establishment of a completely equipped weather outpost over a mile above sea-level on the plateau of Palmer Peninsula. Early in August, 1940, a sledging party from East Base pioneered a route to the plateau, making an ascent which previous explorers considered inaccessible to dog teams, and indicating the possibility of erecting a mountain weather station. Late in October, nearly one and a half tons of equipment were transported by four dog teams to the proposed meteorological outpost, located at 68° 7' S., 66° 30' W. on a plateau knoll about 12 miles east of the main base. Lester Lherke, C.B.M., U.S.N., and Robert Palmer occupied the plateau weather station during November and December. Despite prevailing northeasterly storms of drifting snow, their days were well spent between living quarters in a sturdy tent and meteorological office in a snow cave. For the first time in South Polar regions, detailed high level weather data were obtained in a form suitable for comparison with nearby sea-level observations. Six-hourly check readings on all data were taken concurrently with those at East Base, in addition to the continuous autographic records of wind, pressure and temperature. Snow accretion and ablation were measured. Pilot balloon observations of the winds aloft were especially valuable when there was a low overcast below the plateau. The mountain station contacted the base twice daily by low power radio, sending coded weather reports, which were included in the East Base weather transmissions to South America. These data and frequent special reports were helpful in forecasting for aviation operations at East Base and provide interesting material for future research on the meteorological phenomena of Palmer Peninsula.

Roy G. Fitzsimmons, Physicist, Department of Terrestrial Magnetism, Carnegie Institution of Washington. Preliminary Report on the Magnetic and Seismic Program.

During the period from April 27, 1940, to January 21, 1941, a LaCour insensitive magnetograph was in operation at Little America. Variations of the declination and the horizontal and vertical components of the earth's magnetic field were recorded. Control observations were made with a magnetometer and a dip circle. A general description of the magnetic observatory and the method of observation as well as a report on the preliminary magnetic results were given. During the period from November 17, 1940, to December 28, 1940, a McComb-Romberg seismograph was in operation at the Rockefeller Mountains. A report of the earthquakes recorded and their analysis were given.

Serge A. Korff, assistant professor of physics, New York University. Report on Cosmic Ray Results.

The cosmic ray program of the U. S. Antarctic Service was planned with a view to throwing further light on the connections between cosmic rays and meteorology, and also on the effects produced by such high energy rays passing through matter. The first part of the program, involved the operation of two meters at West Base over the Antarctic winter and a correlation of the records there obtained with temperature, pressure and other effects, such as magnetic variations, and also the operation of the instrument on board ship to obtain further data regarding the temperature coefficient and the latitude-variation. Finally, airplane flights to high altitudes were carried out, which were to be studied in connection with radiosonde data. The second part, namely, studying the effects produced by the radiation, involved (a) operating a cosmic-ray counter on shipboard for comparison with the electroscope data, (b) the operation of a neutron counter and (c) measurement of all bursts in the cosmic ray intensity on the long-term records. With respect to the first part, a pressure coefficient was determined from the data at West Base for each 15-day period of operation. It was found that the least-square solutions of the correlation between pressure and cosmic-ray intensity gave a slope (the pressure coefficient) and an intercept (the extrapolation of the cosmic ray intensity to zero pressure) both of which varied over somewhat wider limits than were anticipated. Further analysis showed that this variation was associated with changes in the light of the mesotron producing layer, but that contrary to the usual procedure in temperature latitudes, this could not be represented as an external temperature-effect. This was found to be due to the fact that the surface temperature was not a good indicator of the distribution of the atmosphere in the column of air above the instrument. Using the radiosonde data, a new dependence upon upper atmosphere conditions was computed, and better agreement was obtained. This was checked by the runs made on shipboard in zones of different surface temperatures. It is a pleasure to acknowledge the excellent work done by Messrs. E. T. Clarke, D. K. Bailey and E. K. Smith in this connection.

Arnold Court, junior meteorologist, U. S. Weather Bureau.

Disappearance of the Tropopause During the Antarctic Winter.

Complete disappearance of the tropopause above Little America III is revealed by the 190 radiosonde observations made from April 25, 1940, to January 15, 1941, as part of the U. S. Weather Bureau's share in the scientific program of the U. S. Antarctic Service. Summertime observations show a definite and rather warm ( $-50^{\circ}\text{C}$ ) tropopause around 9 km, above which the stratosphere is  $-40^{\circ}\text{C}$  or warmer. Spring and fall soundings clearly show the transition from the winter type, with no clearly defined stratosphere and with temperatures to  $-80^{\circ}\text{C}$ , to the summer condition. This hitherto unsuspected behavior of the upper air apparently is due to seasonal differences in radiation, but no indications of such conditions have so far been reported in the northern hemisphere, despite daily soundings at Barrow, Nome, Fair-



banks and other Alaskan stations, and intensive work in Russia and Scandinavia. None of these stations, however, is as close to the pole as Little America III (800 miles). Another phase of the meteorological program, the making of 230 pilot balloon ascents, revealed the prevailing summertime wind at high levels to be southwest or west-southwest, not northwest as had previously been assumed. On the surface, observations covering an entire year were obtained, 11 months of them on a complete 4-a-day basis. Barograms were obtained in duplicate for the entire time, and thermograms except when winter cold stopped clocks. Complete wind records minute by minute were obtained from April 10 to camp abandonment on February 1.

Herwil M. Bryant, Naval Research Laboratory, Anacostia Station, Biology at East Base.

The East Base of the U. S. Antarctic Service is well situated for biological study. Stonington Island, the base of operations, lies just a hundred statute miles within the Antarctic Circle on the west coast of the Palmer Peninsula. Here great glaciers flow down to the sea between high mountains. Precipitous cliffs, many too steep to hold snow, form the shore line. Although frozen-over eleven months of the year, the relatively shallow waters along the coast are rich in marine life, attracting penguin and seal alike. During summer months sea birds are attracted to this feeding ground; some breed on the rocky shore. Two Adelie penguins' rookeries were within sledging distance of the base. Rocks exposed on the steep cliffs were often encrusted with lichens, while thawing weather during the short summer period formed small pools of fresh water, often teeming with aquatic life. The collection of a completely representative set of specimens representing this region was a primary consideration. The U. S. National Museum has received all specimens brought back. At the present time these are undergoing exhaustive classification and investigation. In the field, a thorough study of the breeding Adelie penguin was made. Carl R. Eklund, ornithologist and assistant biologist, made studies on the body temperatures of Antarctic birds. New southern records were recorded for sub-Antarctic species such as the blue-eyed shag (*Phalacrocorax atriceps*), and the breeding southern black-backed gull (*Larus*

*dominicanus*). Of special interest were notes on Collem-bola colonies and the discovery of certain mites living upon lichens, algae and mosses. At East Base, the first representative West Antarctica biological collection was prepared for an American institution and a general biological picture of this unknown region, adding to the work of Bertram and Roberts of the British Graham Land Expedition (1935-1937), was recorded.

Ernest E. Lockhart, physiologist, Massachusetts Institute of Technology. Acclimatization in the Antarctic.

An attack on the problem of acclimatization by white men in the Antarctic was made by studying the effect of sudden changes in temperature on blood pressure, heart rate and respiration rate. This work was extended with data on typical body temperature, blood pressure, heart and respiration rates and metabolism under basal conditions. A study of blood sugar levels was also made. The results of these studies may be summarized as follows: Although pulse pressure is not affected significantly, systolic and diastolic pressures increase 25 to 35 per cent. when a sudden change in temperature is the stimulus. Both the respiration rate and the heart rate are decreased somewhat. Under typical basal conditions pulse and respiration rates, blood pressure and body temperature are slightly lower than normals recorded in temperate climates. Basal metabolism averages 10 to 15 per cent. lower than that reported for temperate climates. Blood sugar levels, on the other hand, are slightly above the normal limit of 120 mg per cent. Although the results presented should be extended, those now at hand indicate that an acclimatization does take place in white men when subjected to the extreme conditions prevalent in the Antarctic. It is suggested that the acclimatization process is begun by the continual pressor action of the low temperature. This primary stimulus, when repeated frequently, as is the case, induces hypo-effects in the several endocrine systems principally involved in metabolism.

The Friday evening lecture was given by Vilhjalmur Stefansson on "Military Aspects of the Arctic," and was an able and timely contribution to this important subject.

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## ANTARCTIC TESTS GIVE ARMY HOODS FOR COLD

### Dr. Paul Siple Bases Designs on South Polar Experience

WASHINGTON, Oct. 17—Results of experiments on clothing for cold climate made by Dr. Paul Siple during the Byrd Antarctic expeditions have been used in the design of three new pieces of soldiers' headgear which have been standardized by the Army Quartermaster Corps.

An olive-drab knitted cap, a knitted toque or stocking cap and a cloth hood, designed for protection of the head and neck during cold weather will be used by soldiers this Winter.

Dr. Siple, who has been assisting the quartermaster general for several months, was responsible for designing the new cloth hood. Adapted from the Eskimo parka for Army use in freezing, wind-swept posts, the hood is made of tightly woven poplin, which is wind and water resistant.

It can be worn in a number of different positions. Tightening a draw-string brings the hood together in front to cover almost the entire face. An attached shawl protects the back of the soldier's head and fits down over the top of his shoulders.

The Army's new cap may be worn over the ears during moderate weather but includes a snug shawl which may be turned down when necessary to protect ears and neck.

Although worn rolled up like the cap in moderate weather, the stocking cap is long enough to be rolled down over the entire face, neck and shirt collar, in freezing temperatures.

ing at the sky.

"If the horizon is dark, it means there is open water in that direction," he said. "If the sky is white or spotted with ice blink, it means there are ice formations and, possibly, land in our path."

### Cloud-Freezing Described

Dr. Siple showed slides of a newly discovered mountain now marking the eastern extremity of the known area in the Antarctic. He said that since 1935 the base of Little America has moved four and one-half miles westward and 2000 feet northward because it is on moving ice.

Clouds freeze in layers of clear ice at Antarctica, the society heard in another report by Prof. F. Alton Wade, Miami (O.) University.

Prof. Wade directed an airplane exploration of formations of clear ice on the Ross Ledge, which had baffled scientists for years.

Until Wade's group first photographed the clouds settling to earth and then later found at the same point layers of clear ice, no adequate explanation of the phenomenon had been presented. He said it was established that the freezing of cloud moisture caused the clear ice.

## ANTARCTIC LESSON

### Scientists' Co-operation Held Peace Example.

Philadelphia, Nov. 21 (A. P.).—An object lesson in peace from the antarctic continent was presented to the American Philosophical Society here today by Prof. F. Alton Wade, Miami (Ohio) University, in reporting on last year's United States antarctic expedition. He said that more than fifty scientists, American and foreign, gave their advice on the program of this expedition. The war was already on when the foreign consultants participated.

"Men of the true scientific world," Prof. Wade said, "recognize no international boundaries in their work. They go out of their ways to aid their brothers in scientific fields, ignoring differences in race, color and creed."

"Their object is to increase and broaden human knowledge, to make life on this earth easier and more enjoyable, to create and not to destroy. Many prominent figures and leaders in our nation would do well to take a page from the code of the scientists."

## Penguin Concerts Puzzle Scientist in Antarctic Study

PHILADELPHIA, Nov. 21.—A strange group ritual performed in unison by penguin communities at Antarctica was described today to the American Philosophical Society as the result of one of the first scientific studies of the birds' habits ever accomplished by man.

The female penguins in concert lift their beaks high in the air, uttering ecstatic gurgling cries while they gradually lower their beaks to rest on their white breasts, according to Herwill F. Bryant, of the National Research Laboratory, Anacostia, D. C., and a member of the United States Antarctic expedition to Little America.

"They adopt a wrapt attitude comparable to the prairie coyote baying at the moon," he said. "There is no known reason discoverable for the act. It appears to be an expression of a sense of well being."

### "Drill Together"

"The strange thing is that the females do their drill together,

while the males pay no attention to them.

"The males also do the same exercise in concert. But when they are gloating over their physical fitness, the females are oblivious and do not take part in the performance."

"Penguins nest in rocky land. Their nests are built of piled-up stones."

"The males do the nest-building while the female idles. But when nesting time comes the female sits for days on the eggs without eating. Cases have been observed where the female fasted for 40 days."

"These nests are often as much as 80 miles distant from the nearest open water. This means the penguins, flightless birds, must waddle 80 miles to reach the water."

### Sky Navigation

Dr. Paul A. Siple, geographer for the United States Antarctic Service told how ships and planes navigated in the Antarctic by look-



# Fifty Below Zero

## What cold can do to men is revealed

By RUSSELL OWEN

It is the unexpected cold, and unpreparedness, which kills people. The coldest known spot in the world where people live is in North Central Siberia, where there are settlements in a region where the thermometer goes down to 90 below zero. It is not unhealthy, even with lack of sun for part of the Winter. The people there know how to dress when they go out; there is warmth in their houses, and life is far from unbearable.

Cold by itself can be withstood; it is cold with wind which is so hard to combat. That is why wrapping one's self up in huge bundles of woolen clothing, for instance, is no protection against cold climates. Those who have lived in cold places, where the spirit seems about to drop out of the bottom of the thermometer, have learned that layers of light woolen clothing are preferable to single heavy woolen undergarments. And over those must be a windproof garment of some sort to keep the wind out and the body temperature in.

**T**HE body has a little heat layer about it that must not be brushed off. If that can be protected from the wind the average person can stand tremendous cold without acute discomfort. That is why so many northern dwellers wear skins. The fur acts as an insulating agent and the airtight skin keeps out the wind and retains the body heat. So long as things next to the skin are kept dry there is little suffering except after long periods of exposure to wind and snow as well as cold.

Dampness makes any clothing cold. One of the greatest problems of a polar explorer is to keep his socks and underwear and sleeping bags dry. It is almost impossible in bad weather that lasts for any period of time. The sleeping bags become soggy from the moisture of the body, the socks get wet and ice forms inside shoes. Then is when a man's stamina is tested to the utmost; it takes real courage to live day after day under those conditions. One can easily imagine the sufferings of soldiers who have no chance to get dry, who must keep on going in their wet and soggy clothing in face of wind and be-

low-zero temperatures. That is what both Russians and Germans are now facing, and the Russians know how to take care of themselves better than the Germans do.

The technical difficulties brought about by cold make modern warfare difficult. For example, any airplane which lands at a field where the temperature is below zero, as has been reported on the Northern Russian front, must have its oil drained immediately. Before that plane can be started again the engine must be warmed and the oil also before it is poured in. It is probable that the Russians have solved this problem by building tiny warm housings into which the engines of the planes can be shoved after landing, much as the Canadians have done for many years in their northern flying.

**B**UT servicing those planes and handling cold metal with bare hands, as must be done at all advanced flying bases, is hard and bitter work. Every boy knows that cold metal burns like fire, and there have been unhappy youngsters who have touched their tongues to cold metal and pulled the skin off. Imagine working on an airplane at 5 to 10 degrees below zero, not to speak of possibly colder weather, when a mechanic cannot wear gloves. Only unclad fingers can be used for some jobs.

Then a man covers his hands with grease to prevent adhesion of the skin and keep out frostbite, and if he is lucky he will have a fire near by, through the flames of which he can run his hands occasionally to warm them up. The blue flame of a primus stove is a good means of doing this, and any kind of blaze helps. I can remember a chilled airplane mechanic muttering:

"What this job needs is a warm-blooded monkey with cold hands."

There is no doubt that both the Russian and German mechanics are having a tough time these Winter days, and as the season advances it will be tougher. Men who repair tanks in the open will have the same difficulty, the same discouraging suffering, when the fingers become numb and burn with frostbite.

**B**UT entirely aside from what

is taking place on the Russian front, the phenomena of cold are interesting. It does strange things. The writer once lived for a year in a land where the thermometer went to 74 degrees below zero and where a month averaged about 60° below.

One of the most startling things that can occur to the novice is to take a pail of warm water out and throw it on the snow at a temperature of about 60° below. All around one is the whispering sound of hard snow contracting, making infinitesimal cracks in the surface, the swishing of invisible movement. The surface on which you stand seems to be alive, and you look around for what is making this sound in a place where no sound should be.

And then you throw the pail of warm water, and 10,000 fire-crackers go off in your face. Just what does it I don't know; probably a physicist does. But there is an explosion when the warm water hits snow at that temperature. A crackling bang that ends as quickly as it began, and by that time you have jumped two feet in the air and settled down again to wonder what happened.

Or perhaps you take a bit of mercury out and drop it on the snow, and it spills out into a solid piece like hot lead dropped on a stone. Take it back in the house and the mercury thaws out again. Perhaps you carry a lantern, and you find ice crystals forming on the inside of the glass, and the flame becomes more and more dim, until it goes out altogether. You investigate and find that your kerosene has taken on the consistency of jelly and won't travel up the wick. So you take the lantern inside and thaw out the kerosene on the stove.

If you are using a flashlight the light becomes dim and goes out also—the battery is frozen. So you learn to carry your flashlight inside your clothing except for the moment when it is absolutely necessary.

**A**ND yet with all these handicaps men can live in comparative comfort in cold weather if they know what to do and have the time to do it. The extreme temperatures of polar regions will not be reached on the Russian front, but when men are without shelter or heat or proper clothing their suffering may be great even when it is only a few degrees below zero.

Roald Amundsen, who reached the South Pole, once told me that he had never been as cold in his life as in Seattle, Wash., because it was windy and damp and he had a tight collar.

## U. S. Expedition to Move Headquarters to Ohio

By the Associated Press.

OXFORD, Ohio, Oct. 15.—The U. S. Antarctic expedition soon will move its permanent scientific headquarters to Miami University's campus here from Boston. A. H. Upham, Miami president, announced today.

Dr. Upham said the lower wing of the University hospital had been approved for use of the expedition. The change of offices is expected to be completed shortly after November 1.

The headquarters here will coordinate compiling of scientific reports of the expedition which returned last summer from the South Pole.

Harold P. Gillmore, official recorder of the expedition, will complete an account of the trip for the Federal Government which backed Admiral Richard Byrd in the exploration.

Dr. Paul Siple, Admiral Byrd's second in command and in charge of research, is expected to move to Oxford upon completion of temporary Army duties.

## BYRD HONORS PROF. HOBBS

### Names Antarctic Area for Him—Cape Is Designated Ruppert

ANN ARBOR, Mich., Dec. 13.—Rear Admiral Richard E. Byrd has named a 300-mile coastline area of the Antarctic Continent Hobbs Land in honor of Professor Emeritus William H. Hobbs, former chairman of the University of Michigan Geology Department.

Professor Hobbs, himself a noted explorer of the Arctic regions and an authority on Greenland, has never visited the Antarctic.

He received a letter from Admiral Byrd today informing him of the Antarctic honor. It said that Hobbs Land included the area formerly known as Ruppert Land and that the Ruppert name had been given to a cape.

## ANTARCTIC BIRDS BANDED

WASHINGTON—The first birds ever banded in the Antarctic regions were some Adelle penguins, South Polar skuas and a snow petrel tagged with Fish and Wildlife Service numbered bands by Herwil W. Bryant, a member of the Byrd Antarctic Expedition, according to Frederick C. Lincoln, in charge of the service's bird banding work.

Mr. Bryant caught ten Adelle penguins on the Red Rock Rookery in Little America in November, 1940. On Feb. 16, 1941, he banded a snow petrel on the Rose Sea Ice-pack and in February and March he banded sixteen South Polar skuas at the East Base.

The three species of Antarctic birds are not regular migrants, Mr. Lincoln explained, but the bands may serve to indicate something of the habits and life span of these species if the banded birds are found by members of future expeditions.



## WON ALASKA PEAK BY ADVANCE PLAN

**Bradford Washburn Describes  
Ascent of Mount Hayes in  
12 Days Despite Storms**

The first successful ascent of Mount Hayes, 13,740-foot peak in Alaska, is here described by Bradford Washburn, who has an impressive record in mountain-climbing in Alaska. His conquests include Mount Crillon, Mount Lucania, Mount Sanford and Mount St. Agnes. He made the first crossing of the St. Elias range from Canada to Alaska in 1935. A graduate of Harvard, Mr. Washburn is executive director of the New England Museum of Natural History.

By **BRADFORD WASHBURN**

North American Newspaper Alliance  
FAIRBANKS, Alaska, Aug. 7—Completing a carefully planned three weeks' mountain-climbing Blitzkrieg, our small party of seven reached the base camp at the head of Delta Creek Wednesday, after the first successful ascent of Mount Hayes, 13,740 feet, the highest virgin peak in the Alaskan interior.

Five members of the party reached the summit just after noon on Aug. 1, after a seven-hour climb from a camp in the 9,500-foot notch in the crest of the magnificent northern ridge. The temperature on top was 12 degrees, with a gale from the northwest, while in Fairbanks the temperature at the same moment was 69 degrees.

At the summit a solid sea of great stormy clouds rolled past us to the north, with a surface of 12,000 feet and the peak rising from it like an icy island in a fog. To the south and east there was a view over huge glaciers and a wilderness of jagged peaks and ridges.

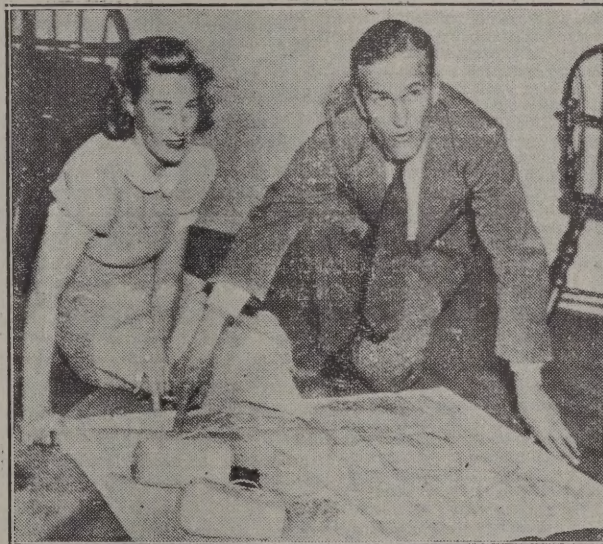
### Members of Expedition

Members of the party were Henry S. Hall Jr. of Cambridge, Mass., who planned the expedition with me; Sterling Hendricks of Washington, D. C.; Benjamin Ferris of New York, William Shand of Los Angeles; Lieutenant Robin Montgomery, U. S. A.; Mrs. Washburn and myself.

We left Fairbanks on July 15 by airplane and landed in a small field on gravel at the head of Delta Creek, ninety miles southwest and twelve miles from the base of Mount Hayes. The size of the field necessitated three flights to land all the party, and we walked thence to the base of the mountain, where 600 pounds of equipment and food were parachuted to the camp from the plane, and another 700 pounds, carefully packed in bundles, were dropped out to us with no parachutes. Practically nothing was damaged except a box of crackers



Mr. and Mrs. Vilhjalmur Stefansson



Mr. and Mrs. Bradford Washburn.

and a sack of prunes, which exploded like bombs when they hit large rocks.

The base camp was established on July 20 at the 5,000-foot level, and three days later Hall, Hendricks, Mrs. Washburn and myself occupied a camp at 8,300 feet and started scouting out the route ahead. A storm slowed up the advance, but by July 26 all of us were living in a camp at 8,000 feet, pitched in a sheltered hollow between huge snowdrifts. Another storm on July 27 brought a two-foot snowfall.

### Hit by Storm at 13,000 Feet

We broke a trail up the ridge through knee-deep snow and drifts often over waist deep to carry eight days' supply of food and gasoline to a deep cleft in the ridge at 9,500 feet. There camp was set up for a final assault on the summit, 4,000 feet above. After recon-

naissance on July 29 we were thrown back by a storm at 13,000 feet and descended for more food and fuel.

On Aug. 1 all of the party reached the top of Mount Hayes in a twelve-hour climb except Hall, who remained at the high camp, and Lieutenant Montgomery, who had returned to Fairbanks four days before for Army duty.

The summit of the ridge on Mount Hayes is one of the most stunning I have ever seen in ten years of Alaskan experience. The great frost feathers, knife-edged ice blocks and pinnacles between the 12,000-foot shoulder and the peak are beautiful beyond description. There were 7,000-foot cliffs on each side of the ridge.

### Exploration Continued

We reached the high camp on our return at 6:30 P. M., Aug. 1, and returned to base camp on Aug.

## Stefansson-Baird Bridal Announced; Explorer Weds Aid

The Marriage April 10 Last in  
Wellsville, Tenn.; Wife Has  
Been Scientist's Librarian

Mr. Vilhjalmur Stefansson was married last April 10 to the former Miss Evelyn Schwartz Baird, his librarian, the sixty-two-year-old Arctic explorer said Dec. 12. They were married at Wellsville, Tenn., at the home of friends, Professor William McCall and Mrs. McCall. Professor McCall is on the faculty of Teachers College, Columbia University.

Mrs. Stefansson, who is twenty-eight, has been in charge of the Stefansson library of 15,000 volumes on Arctic exploration for the last three years at Mr. Stefansson's office, 67 Morton Street.

The marriage is the second for Mrs. Stefansson and the first for the Canadian-born explorer and writer. Mrs. Stefansson, who is a native of New York City, was married here in 1932 to Mr. William Britton Baird, artist. They were divorced five years ago.

Mrs. Stefansson is the daughter of Mrs. Bella Schwartz, of 340 West Seventy-sixth Street, and the late Jeno Schwartz, Manhattan fur designer. Mr. and Mrs. Schwartz were born in Hungary and were married in this country.

Mrs. Stefansson attended public school in New York and was graduated twelve years ago from Washington Irving High School. After graduation she studied art, worked with the puppet shows of Tony Sarg and Remo Bufano, and became a commercial photographer.

From 1913 to 1918 Mr. Stefansson was commander of a Canadian Arctic expedition which explored land and seas in Canadian and Alaskan sectors of the Arctic. He previously had made several exploration trips to Iceland under the sponsorship of Harvard University, from which he was graduated in 1904.

Mr. and Mrs. Stefansson are living in Greenwich Village.

2 and descended thence to the landing field, where we radioed to Fairbanks for a plane with a small portable transmitter. Ferris, Shand and Hendricks are remaining in the mountains ten days longer for further exploration. Hall, Mrs. Washburn and I plan real photographic flights over the same region on the first clear day before returning east.

The first attempt to climb Mount Hayes was made in 1935; the names of the members of the party are not known but they were local Alaskans. They reached 9,000 feet on the great eastern ridge before abandoning the climb. On July 13, 1936, I made the first flight around Mount Hayes with Pilot S. E. Robbins of Pan American Airways on an exploration for the National Geographic Society and obtained aerial pictures, from which every detail of this year's carefully planned attack was worked out.



## U. S. Strives to Save Fur Seals, In Peril as Japan Ends Treaty

**Hopes to Avert Extinction of Valuable Animals  
Despite War Threat in Pacific; Herds Were  
Rescued Once by Four-Power Agreement**

WASHINGTON, Oct. 18.—Despite the increasing strain on Japanese-American relations generally, the United States is seeking to preserve the benefits of an unusual treaty for the conservation of the Pacific fur-seal herds, an agreement that expires Wednesday through Japanese abrogation, it was learned today at the State Department and the Department of the Interior. Details of plans to continue the effort, however, were not disclosed.

Complete lapse of this thirty-year-old convention among the United States, Japan, Great Britain and Russia that saved the fur seals from virtual extinction a quarter-century ago would seriously threaten continuance of what has been regarded as the outstanding achievement in wildlife conservation through international co-operation.

Japan abrogated the treaty, effective in twelve months, last Oct. 23, but since then, the State Department reported today, there has been no formal request for a conference under a convention clause that says: "It is agreed that at any time prior to termination of this convention, upon the request of any of the . . . parties, a conference shall be held forthwith . . . to consider and if possible agree upon a further extension . . . with such additions and modifications . . . as may be found desirable."

The principal provision of the treaty, officially the Convention for the Preservation and Protection of Fur Seals, is an agreement banning pelagic sealing, which means the killing, capturing or pursuing in any manner of fur seals at sea.

Between 1867, when the United States purchased Alaska, and 1911, the year the treaty was ratified, pelagic sealing had reduced the number of Pacific fur seals from three or four millions to an estimated 123,600. Since then scientific censuses have been taken annually on the Pribilof Islands in the Bering Sea, where almost the entire seal population passes the summer, and by Aug. 10 this year the count had risen to 2,338,312, with an increase in one year of 153,176, or more than the entire 1911 population, and the highest number since the conservation program was launched.

After the notice of abrogation press reports from Japan last spring said Japanese nationals were planning extensive pelagic sealing when the treaty lapsed. While trying to find means for preventing final abrogation, however, United States officials have been carefully avoiding any public discussion of the situation that might complicate negotiations for revision or renewal of the convention.

At the State Department today, Wallace McClure, acting chief of the treaty division, said: "Although the Japanese notice contained no reason for terminating the convention, it was indicated that both direct and indirect damage is alleged to have been inflicted on the fishing indus-

try by the increase of fur seals. The Fish and Wildlife Service of the Department of the Interior has under preparation an ocean survey and study relative to the migratory and feeding habits of the seals."

Charles E. Jackson, acting director of the Fish and Wildlife Service, said that the vessel being outfitted for this survey is the Black Douglas, now at Savannah, which is expected to be in readiness in a few weeks.

### Americans Might Take Seals, Too

Both Mr. McClure and Mr. Jackson explained that a United States law enacted in 1910 prohibiting pelagic sealing in United States territorial waters will remain in force, but indicated that a 1912 law giving effect to the convention will expire, as the law itself states it "shall continue in force until the termination of the said convention." This law forbids the importation of any skins obtained by pelagic sealing and entrance to American territorial waters or harbors of any ships that have engaged in such activity.

It is generally believed, said Mr. Jackson, that final lapse of the convention would permit United States as well as other nationals to engage legally in pelagic sealing unless and until new legislation is enacted.

"Pelagic sealing is wholly indefensible both upon economic and humane grounds," according to Ward T. Bower, chief of the division of Alaskan fisheries of the Fish and Wildlife Service. "It draws heavily upon the breeding female seals, which are protected from killing on land. If the mother is killed while at sea for food within a few weeks after birth of her pup (and the mothers frequently go 150 miles to sea to obtain food), it means death by starvation for the pup, as the female will nurse none but her own pup."

"The killing of female seals on their northward migration also means the loss of unborn pups. Another wasteful practice in pelagic sealing is that only about one out of five animals killed actually is recovered by the hunters before the carcass sinks."

Another problem raised by abrogation is the future division of pelts of seals killed for their fur on the Pribilof Islands, where there is a monopoly of the United States government operated by the Fish and Wildlife Service.

Under the convention the United States each year has been turning over to Japan 15 per cent of the cash obtained from sale of the skins taken there, and 15 per cent of the skins to the Canadian government. Two very small herds make their summer breeding grounds on Japanese and Russian islands in the Bering Sea, and of the skins taken there Russia has been giving 15 per cent each to Japan and Canada, and Japan 10 per cent each to the United States, Canada and Russia.

An indication of the relative size of the United States and Japanese herds is seen in the fact that in 1939 the number of pelts taken in the Pribilof or Fur Seal Islands was 60,473 while only 2,100 were taken on the Robben Island ranges of Japan.

This summer native employees of the Fish and Wildlife Service in the Pribilof Islands took 95,013 skins, of which 14,252 will be delivered to Canada. Japan will receive a cash payment for her share of the 1941 take, but the exact amount cannot be determined for a year or more until the skins have been treated by a series of involved processes and then sold at public auction in St. Louis by the Fouke Fur Company, exclusive agent for the government in the preparation and sale of the skins.

At the fall auction recently black-matara-brown and safari-brown skins brought an average of \$40.75, \$51.75 and 46.21, respectively, increases of 55, 56 and 58 per cent over prices obtained at the auction in March.

What new arrangements can be made among the four original signatories of the expiring convention, or among the United States, Canada and Russia, to ban pelagic sealing again or redivide the pelts taken from each herd under some tri-government conservation pact, is the subject of study by State Department officials and of much concern to the conservation-minded Fish and Wildlife Service.

## U. S. Vessel Off For Survey of Fur-Seal Herd

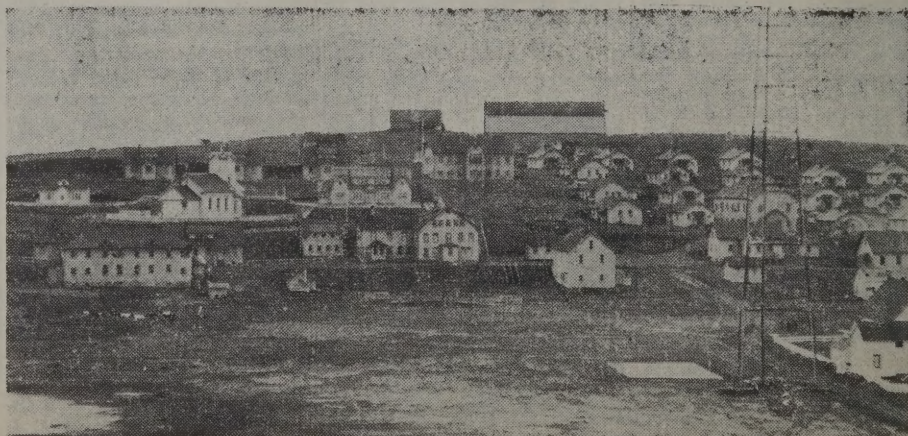
**The Black Douglas to Check  
on Japan's Charge That  
Animals Spoil Fishing**

WASHINGTON, Nov. 22.—The United States Fish and Wildlife Service survey vessel Black Douglas, which will be used for an investigation of feeding and migration habits of the Pribilof Islands fur-seal herd as a result of abrogation by Japan of the four-power convention for the preservation and protection of fur seals, left Panama Tuesday for Seattle, Dr. W. B. Bell, chief of the Division of Wildlife Research of the service, announced today. The vessel sailed Oct. 29 from Savannah, where it had been overhauled, and is due about Dec. 10 at Seattle, which will be headquarters for the investigation.

In abrogating the treaty Japan indicated informally that the Pacific fur-seal herd was inflicting both direct and indirect damage on Japanese food-fish sources, a contention that does not conform in general with knowledge of the habits of the animals, although there is still much to be learned about them. The United States investigation is expected to produce new information that will be helpful in making plans for future conservation and management of this valuable herd, which was saved from extinction by the convention in 1911, and in negotiations for a new pact with Japan, Canada and Russia.

Dr. Victor B. Scheffer, naturalist and biologist, will be in charge of the scientific investigations aboard the Black Douglas under the direction and supervision of Dr. Bell.

Dr. Scheffer has made previous investigations of the Pacific fur seals, and while stranded on St. Paul Island, in the Pribilof Islands, by storms late in the summer of 1940, directed the branding of 5,000 seal pups on the islands by a crew of Eskimo employees of the Fish and Wildlife Service. Such branding enables the service to obtain



Village of St. Paul on St. Paul Island, center of sealing operations in the Pribilof



information on the migrations, life history, annual catch and other data on these animals. Last summer 10,000 more pups were branded and marked by metal tags.

Their winter whereabouts not generally known, the valuable Pacific fur seals, not to be confused with the ordinary seals or sea lions seen in circus acts, arrive in the Pribilofs each May to breed and bear their young. They leave in September or October, and have never been found ashore in any other place. In the spring they assemble off the California coast to begin their long return journey to the Bering Sea Islands, and generally are escorted by cutters of the Coast Guard, which also has maintained an Arctic patrol for their protection from illegal hunters.

Under the convention abrogated by Japan the four signatories—the United States, Great Britain, Japan and Russia—prohibited pelagic sealing, the hunting or killing of seals at sea.

Destruction of the animals was extremely easy before the convention was ratified, because they always came back to the one small group of islands in the Bering Sea and stayed within a radius of a few hundred miles of it for the summer, leaving it only to seek food.

It is believed the Pribilofs became their annual breeding grounds because these islands are covered in the summer with almost continual fog, a condition that suits the seals perfectly because they seem to resent direct sunlight. Harems with an average of fifty cows almost blanket the shores, while the "bachelors," males less than five or six years old, and aged, defeated bulls form a large fringe around the outer edge of the breeding grounds.

Roars of the millions of lder bulls, pups, cows and ferocious fighting bulls guarding their harems can be heard for miles at sea, while at the water's edge the mothers teach their pups to swim. While these animals are among the fastest and strongest swimmers in the ocean, the young cannot swim until taught by their mothers, who have to push them into the water at first.

While the Tokio newspaper "Asahi" reported Oct. 23 that the fur seals would be hunted to feed and clothe Japanese armies in Manchukuo, Korea and north China after the treaty lapsed, the government on the same day handed the American Ambassador a statement issued by the director of the Japanese Bureau of Fisheries stating:

"Until decision shall have been reached with regard to these matters (sealing), for internal purposes there shall be no change and therefore as heretofore Japanese nationals will not be permitted to violate the law and other measures taken by the government (giving force to the expired convention). The competent authorities will absolutely forbid any plan partaking of the character of a free enterprise. They wish to make it perfectly clear that operations hereafter will be carried on strictly in line with national policies."

According to the State Department, Japanese authorities have indicated informally that it is not the intention of the Japanese government to abandon the possibility of regulating the taking of fur seals by international agreement, and there is no possibility of enactment before April, 1942, of new Japanese legislation under which Japanese nationals might engage in pelagic sealing.

## WOMEN OF PRIBILOF COPY AMERICAN STYLE

### Penguin to Head North With High Shoes, Silk Hose

SEATTLE, Aug. 23 (P)—Natives of the Pribilof Islands, prosperous after a good seal season, are adopting American styles and entertainment, from high-heeled slippers to radios.

When the little ship Penguin heads north from here within a fortnight for the last trip of the season, loaded to the gunwales, a goodly portion of the cargo will be mail-order goods for the natives.

"The native women go strong for all the feminine articles of apparel of their white sisters," said Edward C. Johnston, superintendent of the fur seal division of the United States Fish and Wildlife Service. "They like the highest heeled shoes, silk stockings and the other styles."

"Musical instruments and radios also are in great demand, and no native house is complete without them."

The Penguin docked with 27,000 fur seal pelts, bringing the total season's take in the Pribilofs to 95,000 bachelor seals, compared with 70,000 last year. The pelts go to the auction block in St. Louis. The price last year was around \$27.50 each.

Under international treaty, the United States gets 70 per cent of the pelts, Japan 15 per cent and Canada 15 per cent. The natives kill seals under government supervision and get 60 to 75 cents for each.

Pribilof natives have modern concrete houses, with electric lights. They dress plainly, as a rule, but the women revel in the latest styles for parties and dances.

There are two main islands, St. George and St. Paul, with a total native population of about 560.

## FUR SEAL PACT ENDED

### Japan Abrogates Convention to Conserve Herds

WASHINGTON, Oct. 24—The convention of 1911 for the protection of fur seals has been terminated as a result of notice given by Japan a year ago, Secretary of State Cordell Hull announced today, but means are being sought for continuing conservation of the seals in the absence of an agreement.

Japan gave as reason for abrogating the pact that damage had been inflicted on the Japanese fishing industry by the increase of fur seals. It is estimated that the seal herds increased during the period of protection from about 125,000 in 1911 to 2,300,000 at the present time.

### Aleutians Biggest Game Refuge

The Aleutian Islands in Alaska constitute the nation's largest wild life refuge, with 2,899,685 acres for Pacific walrus, auklets, puffins, other sea birds, caribou and big brown bears, reports the Department of the Interior.

## Congress Makes Sea Safe for Arctic Walrus

WASHINGTON, Aug. 12 (P)—

Congress has decided to make the world safe for Alaskan walrus. If President Roosevelt signs a bill which the Senate passed and sent to him yesterday it will be a crime to kill, sell or possess walrus of the Arctic and Bering Sea coastal waters.

The measure also places a ban on walrus exports, chiefly to discourage Eskimos from killing the huge animals for the ivory tusks. A mature walrus weighs about 3,000 pounds and has tusks weighing from 10 to 20 pounds. The tusks, in the raw state, are worth from 50 cents to \$1 a pound.

Once abundant throughout the Bering Sea region, walrus today are extinct over much of their former range. The Interior Department told Congress that about 12,000 were killed annually by ivory hunters during the latter part of the 19th century.

The walrus protection measure would permit Eskimos and Aleuts to kill the animals for food and clothing, and miners and explorers might shoot them if other food were unavailable.

## 40 OF BYRD'S DOGS TRAINING FOR DEFENSE

### Huskies Being Prepared for Service in Newfoundland

WASHINGTON (Science Service)—They did not register for defense duty, but nearly forty dog veterans that saw hard exploration service with the Antarctic expedition in 1939-40 are among the "selectees" that will aid American defense in the North this Winter.

Thirty-seven out of forty sled dogs already have made good in their New Hampshire training camp and will go to Newfoundland posts for duty in November, according to reports received by the War Department.

Making good, in their case, means chiefly that the canine recruits have built up their fitness, by a strict regime of conditioning, like athletes, so that they can stand a Winter of work in the cold. Antarctic exploration work is hard on dogs. Some of the canine veterans had become afflicted by snow blindness, as humans are when their eyes cannot stand the glare on ice and snow. The snow-blind dogs would run around wildly and could not see well.

Newfoundland Winter will be a comparatively mild experience for these dogs, the remount division of the Quartermaster Corps believes. Cold will be far less severe than South Polar blizzards. The dogs can have a better diet. Besides Army sergeants with veterinary medical knowledge, the dogs' trainers include a man who worked out several tight-packed rations

## JAP ENTRY INTO WAR SAVES WHALE HERDS

### Tokyo Fleet, Bottled Up, Is Known as Reckless Killers

WASHINGTON (Science Service)—Whales in Antarctic regions may be getting a break at last, as a result of the entry of Japan into the war. If their whaling fleet of six or seven factory ships and forty or more killer boats had sufficient warning of their government's intention to run amok and stayed home, that means a lease on life to the 10,000 to 12,000 whales they would have slaughtered during the current season. If they did go out in October and are now on the whaling grounds they will probably be rounded up by New Zealand cruisers, or at any rate driven into the long, precarious northward cruise in the attempt to get home to defended waters.

Nobody in this country seems to know where the Japanese whaling fleet is. Normally, the ships stop at the port of Freemantle, near the southwestern corner of Australia, on the way to and from the whaling grounds. But Australian authorities here either do not know, or if they do know, they are not telling.

Of the European whaling fleets, only the English and part of the Norwegian ships are free to go into the Antarctic. The few whalers that Germany had have been tied up in Hamburg harbor since the outbreak of war in 1939. They may have been blown to bits or burned to the water's edge by the many blastings which RAF bombers have loosed on Hamburg. One or two of the Norse ships were sunk, at least one captured by the Germans and slipped through the British blockade to a German port. Some of the others are carrying gasoline and oil to England.

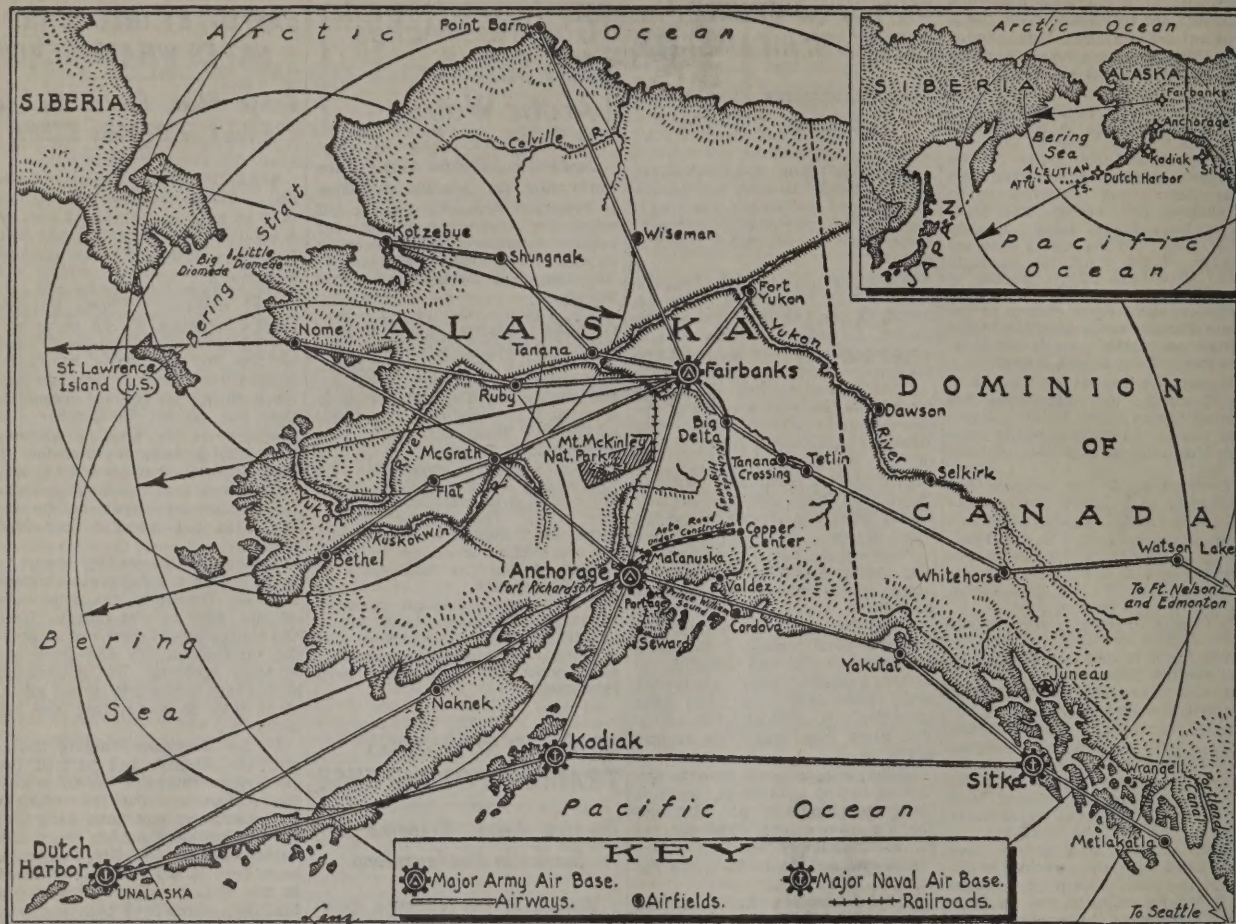
Absence of the Japanese ships will be especially beneficial to the whales, because of all the nations engaged in whaling only the Japanese would not sign the international convention for the conservation of whales, to which even the Nazis subscribed. They killed recklessly and wastefully, in utter disregard of the rights of either the whales or the whalers under other flags. They made themselves the most thoroughly unpopular persons in all the Far South Seas.

for the Antarctic.

If the Antarctic dog veterans make good, the Army expects to expand the sled dog branch of the service, since dogs can be valuable in transport in the North beyond railway heads and in the interior. Huskies at their training kennel in Wonalancet, N. H., are reported apt at learning "Gee" and "Haw" commands, just as Army mules do.

Like soldiers on manoeuvres, Army dogs are using Ersatz equipment when need be. To imitate Winter snow conditions in snowless New Hampshire in Summer, the sergeant in charge of the dogs rigged up a sled on wheels with a hand brake.





**U. S. Rushes Military Program in Northern Outpost**  
Circular lines radiating from key air bases show sectors commanded by interlocking aerial defenses

## Defense of Alaska Rests On Strategic Air Fields

Ten times the original purchase price invested in strategic network of bases.

By Albert D. Hughes

Aviation Editor of The Christian Science Monitor who has just flown to Alaska to study American air defenses following a tour of Canadian defense and training stations.

FAIRBANKS, Alaska, Aug. 9.—The United States is investing in the defense of Alaska more than ten times the original purchase price of the Territory.

It seems strange today that William H. Seward, who was Abraham Lincoln's Secretary of State, had difficulty in getting the American Congress to ratify in 1867 an expenditure of more than \$7,000,000 named by Russia as the price for Alaska. The price for "Seward's Folly" was finally set at \$7,200,000. Yet the United States is now making an investment of \$75,000,000, conservatively estimated, for land and sea bases to assure that the Territory is

amply protected against invasion.

These military expenditures do not take into account parallel civic projects in Alaska, including civil aeronautical developments, which are now going on. Many of these are obviously inspired by defense and the "boom" which it has brought about in Alaska.

As for the military money which is being poured into Alaska, no one, not even the military experts, would be able to tell when the United States can stop. What is now being paid for is the cost of a fundamental military establishment to defend Alaska. Up to now Alaska has had nothing, in a modern military sense, with which to defend itself.

### Preparedness the Key

To this primary investment in a military establishment must be added the cost of maintaining it in an alert state ready to defend an invasion — perhaps tomorrow, maybe next week, a month or a year, possibly never. That it may be tomorrow, however, is the premise upon which Alaskan military developments have been projected.

Approximately 75 per cent of

defense expenditure in Alaska is for aviation projects. This is hardly due either to whimsy or mere enthusiasm on the part of the military for air but rather to Alaska's geography.

Take a look at Alaska's geography for a moment. Though an area only twice as big as Texas and one fifth that of the United States, yet Alaska has a 26,000-mile coastline longer than both American seaboards. Alaska extends s from the Portland Canal, its southeastern boundary with Canada, to the Attu Island at the tip of the Aleutians, or approximately 42 degrees of longitude as compared with the 57 degrees that the United States itself covers. Alaska spreads over more degrees of latitude than the United States, approximately 30 degrees as compared with 25 in the United States. Obviously the only way to patrol such a sprawling area is by air.

### Land Communications

As for ground travel in Alaska the phrase applies only to a narrow belt in central Alaska running from Fairbanks to Anchorage and Seward. Here the Government-

owned railroad and the Richardson Highway parallel each other, the rails running between Fairbanks Anchorage and Seward and the road from Fairbanks to Valdez. Only in the north at Fairbanks do rail and highway meet.

But this situation is to be improved in the south. The Alaska Railroad is being diverted eastward from Portage Bay to Prince William Sound where the boats of the Government-owned Alaska Steamship Company bound up from Seattle and Juneau, the capital, will then call. A new highway is also under construction from Anchorage northeasterly through Matanuska Valley, the Federal relief colony whose sausage is now famous in Alaskan restaurants, to Copper Center on the highway north of Valdez.

Elsewhere in southwestern and northwestern Alaska and in the "Panhandle," the southeast strip along the coast, the fast method of travel is by air. It takes only four hours, for instance, by commercial air service between Fairbanks and Nome in winter, a journey that requires a month by dog



team. In summer there is considerable steamer traffic along the ports in the southwestern Kushokwim area. This ceases when the ports freeze. For these reasons an invasion and defense of Alaska would be carried on primarily by air.

#### Construction Activity

Thus for well over a year, when defense projects began, a furious construction activity has been carried on all over the Territory. At the moment there is a usable system of air bases and fields ready in the Territory. By freeze-up time there is expected to be a usable landing strip on virtually every Alaskan field planned under defense projects.

What is being developed is a system of airways with landing fields radiating from the two principal centers of Fairbanks and Anchorage. From Fairbanks airways branch northeast to Fort Yukon, north to Wiseman and Point Barrow, northwest to Tanana, Shungmak and Kotzebue, west to Ruby and Nome, southwest to McGrath Flat and Bethel, due south to Anchorage, Valdez, and Cordova and southeast to Yukon Territory along a string of fields which is to connect with the string Canada is building from Edmonton.

From Anchorage there are routes diverging southwest to Nakhnek and Unalaska (Dutch harbor naval base), south to Seward and Kodiak, northwest to McGrath and Nome, and southeast, by way of Seward, to Cordova, and thence to the string of bases along the coast to Seattle.

#### The Inside Route

Two strings of air fields link Alaska with the United States. Both are now in process of building. The coast route is nearly an all-American route except for one stop in Prince George, British Columbia. For long range planes it is an American route. From Seattle the shorter range bombers hop to Prince George, thence to Metlakatla on Annette Island at the southeast tip of Alaska, where an air base is nearly finished. The planes then hop to the Naval base at Sitka, the old capital of Russian Alaska, which is nearly complete, to Yakutat, under construction on Yakutat Bay, and thence to Anchorage.

The inside route from Edmonton, which is being built by the Dominion of Canada under the joint Canadian-American defense plan, makes its Alaskan landfall at a field which is to be known as Boundary, near Teslin. Then there are landing strips being constructed at Tanana Crossing and Big Delta before the plane arrives in Fairbanks.

When these Canadian and American air fields are finished the shorter range pursuit and interceptor craft will be able to fly to Alaska as easily as the medium-range and long-range planes.

At Fairbanks is the Air Corps' Ladd Field, a \$4,000,000 "cold weather experiment station," where the details of Arctic operation are being studied. Officers and personnel are expecting to move from their temporary wooden barracks at any moment now to modern offices in a giant hangar whose size would credit

## Valley of 10,000 Smokes Loses Oomph; Only Eight Smokes Left, Report Says

JUNEAU, Alaska, Aug. 12 (P)—The Valley of Ten Thousand Smokes, relic of one of America's most unusual natural phenomena, is losing its punch. There are only eight smokes left.

This surprising information was relayed here today by J. C. Roehm,

### Young Couple to Live A Year With Eskimos

#### Life Near Arctic Circle Called 'Dream Come True' by Wife

KANSAS CITY, Mo., Oct. 11 (UP).—Mr. and Mrs. Nelson Page, young Kansas City couple wed only a year, are en route to the interior of Alaska, where they will live in an Eskimo village for a year, fifty miles south of the Arctic Circle.

The Pages will live on supplies shipped north weeks ago. Two tons of foodstuffs went early because their Buckland, Alaska, base is isolated from river communication and transportation after late August. Ten pounds of candy is included.

"This is a kind of dream come true for me," Mrs. Page said. "I've wanted for years to go to Alaska and I've even kept an Alaska scrapbook."

The couple will work for the Interior Department in the Alaskan settlement development program.

to any at La Guardia in New York. It is a vast room about 200 feet wide, 300 feet long and 40 feet from floor to ceiling. It could store several squadrons of bombing planes, yet it is too small for the giant Douglas B-19 bomber recently flight tested in California.

#### Space Available

Yet there is plenty of space available should the Air Corps decide to build a hangar to accommodate the B-19. The Ladd Field area is approximately 18 miles square, boasts a concrete runway, 5,000 feet long and 250 feet wide, with 5,000 more feet cleared and available on the end of the concrete. The runway stands in a cleared area 500 feet wide which is sufficient to accommodate the wing spread of the largest types of military planes. Other runways are planned.

Ranged around the big hangar in college quadrangle fashion are the officers and enlisted men's quarters. The sidewalks which connect these various dormitory buildings are also the roofs of tunnels connecting these buildings. In extremely bitter winter weather, which is admittedly "uncomfortable" it is unnecessary for the personnel to go out of doors to reach any building or the hangar. The little soldier city also has complete recreation facilities for the men to enjoy themselves indoors in winter time.

Ladd Field is constructed on a vast scale yet it could be tucked in a corner of Fort Richardson at Anchorage, the \$12,000,000 Alaska headquarters for the United States Army. Here Brig. Gen. Simon

a mining engineer, after a trip across the Aleutian Peninsula.

Mr. Roehm, offering no explanation for disappearance of thousands of steam jets which made the valley like something out of a Dante Inferno, radioed that the remaining jets are small, mild and apparently growing smaller. Lusty Alaskan vegetation is creeping over once-molten sands, and Mr. Roehm predicted that the smokes would soon stop entirely, allowing the valley to return to its peaceful character of before 1912.

Before 1912, the little valley was merely a backdrop for lofty Mt. Katmai, a quiescent volcano. Seventeen miles by four, the valley, like the surrounding peninsula, was uninhabited, but ancient Indian trails showed it had been a favorite hunting ground.

Suddenly, one section upended and a new volcano, since named Nova Rupta, spewed incandescent sand which consumed every bush and tree. Snowdrifts remained intact under a sand cover. Vents—tiny cracks and holes 150 feet wide—spouted steam.

Then, in an awesome climax, Mt. Katmai exploded. Its snowy crown vanished, leaving a crater three miles wide and at least 3,700 feet deep. Ashes covered Kodiak

Island, 150 miles away. Cordova, 360 miles east, had acid rain. Fumes tarnished brass in Victory, British Columbia, 1,500 miles south, and haze was visible in Washington, D. C. Natural scientists calculated that dust in the air deprived the North Temperate Zone of 10 per cent of the sun's heat.

When it was over, only a lake in the crater and the Valley of Ten Thousand Smokes remained. Discovered three years later, they were incorporated in a national monument.

But now, according to Mr. Roehm, grass grows on the sand, the vapors are vanishing, and the smokes have lost their oomph.

### Nurse Rescued in Alaska

#### Found by Indian After Losing Way With Dog Team in Snowstorm

FAIRBANKS, Alaska, Oct. 23 (P).—Miss Lucille Wright, a veteran nurse in the United States Indian Bureau in Alaska, was rescued last night after passing forty-eight hours in a forest during a blizzard.

Miss Wright, formerly of Minneapolis, became lost in a snowstorm Monday while driving a dog team between Tetlin and Moose Creek, about 200 miles east of Fairbanks.

Without matches to build a fire, she took refuge in a forest and was found by an Indian a mile from Tetlin. A radio message said she was unharmed except for frostbitten toes and exhaustion.

have been kept particularly secret by the Navy Department.

#### Interior Bases

Many of the interior fields are being constructed by the Civil Aeronautics Board, in co-operation with the Federal Communications Commission and the United States Weather Bureau, and will be turned over to the War Department when they are finished.

The Boundary field, for instance, on the Alaskan-Yukon Territory boundary, now under construction, is a particularly difficult field to build owing to the task involved of getting tractors and grading machinery inland. It will be a 6,000-foot landing strip when finished.

At Tanana Crossing a three-runway field with 6,000-foot landing strips is under way. At Big Delta another three-runway field with strips from 4,000 to 7,000 feet long is under way. One strip has been "bulldozed," which means its earth covering has been removed, another runway has been cleared for bulldozing and a third runway is now being cleared.

At Nanana, southwest of Fairbanks, the landing area is being bulldozed. At McGrath, which is a center of cross traffic, large gasoline storage tanks are being sunk in the earth. At Nome, whose famous sands were sluiced for their gold, a new field is going in. This simultaneous development of fields is impressive because of the heavy task of getting men and material in to build them. When they are finished and the war is over Alaska will have a fine set of civil air fields.

Bolivar Buckner commands a soldier city with an estimated population of nearly 12,000. This is twice the size of Anchorage which has a resident population of about 5,000. In addition there is an imported civilian labor population of approximately 2,000 which has a year's work to do yet before this vast base is completed. Anchorage is a strategic spot which controls both the sea and air approach to central Alaska.

#### Weather Conditions

Because it is so strategic its location overrode weather considerations. During June, for instance, there were 22 days of good flying weather recorded in Fairbanks which is in the wide valley of the Tanana River, while Anchorage in the southeast weather area had only eight days of good weather during the same period.

Elmendorf Field at Fort Richardson is only a part of the military establishment there yet it boasts 6,000-foot concrete runways. Three large hangars are also completed. Nearly 50 per cent of the 500 permanent buildings to be erected there are finished. In addition there is an anti-aircraft unit stationed there.

The sea approach to Alaska is guarded by a ring of Naval air bases under construction at Sitka, on Baranof Island, in the Panhandle, at a cost of approximately \$8,000,000; a Naval air and submarine base at Kodiak, on Kodiak Island, at a cost of \$15,000,000; and a Naval air and submarine base at Dutch Harbor, Unalaska, at the tip of the Alaskan peninsula. The cost and details of this latter base



## ALASKA EAGLES PLENTIFUL

## Federal Agent Reports No Signs of Extinction

WASHINGTON (Science Service)—Eagles in Alaska, persistently reported to be in danger of extinction through reckless shooting by bounty hunters, are far from last-stand conditions, Ralph Imler of the United States Fish and Wildlife Service states. Mr. Imler spent the Summer in a study of the eagle population along the Alaska coast.

There is no denying that the number of eagles in Alaska has been greatly reduced, he says. How great the reduction it is impossible to determine now, for there never was anything like an accurate census of the big birds before 1917, when the bounty system first went into effect. However, even now there is hardly a mile of shoreline without its eagle somewhere in sight.

Alaskan eagles are apparently all of the bald species. Mr. Imler did not see any golden eagles all Summer.

The bounty on eagles, established by the Alaska Territorial Legislature in 1917, is \$1.00 paid for each pair of feet. From 1917 to the present, bounties were paid on 110,000 eagles shot, and it is estimated that at least another 100,000 have died as a result of wounds, but in such places that the hunters could not get at them to cut off their feet.

## Army Planes Parachute Food to Mountain Party

## War Department Pleased by Secret Alaskan Test

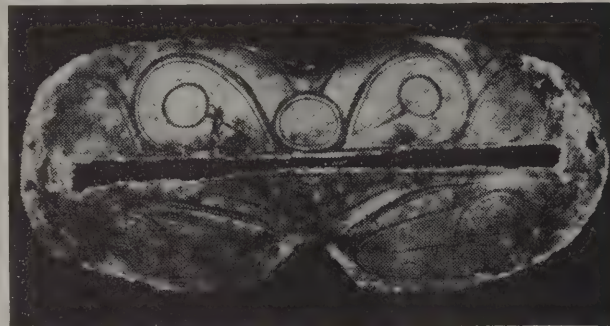
Tests by two United States Army B-18 bombers in dropping supplies by parachute to a mountain-climbing expedition last June proved highly successful. Walter A. Wood, head of the Department of Exploration and Field Research of the American Geographical Society, disclosed Nov. 21.

The climbers, Mr. Wood said, scaled two major peaks of the St. Elias range, near the Alaska-Yukon territory boundary in Canada. Details of the expedition were withheld until now because the War Department, which sent Captain Albert Jackman as official observer, only recently gave permission for publication of the Army's part in the tests.

Mr. Wood, his wife, Captain Jackman and three other scientists went on the expedition. The two Army bombers, each with a crew of six men, dropped nine loads of equipment and food at seven selected levels on Mt. Wood, which is 15,880 feet high, and on near-by Mt. Walsh, 14,800 feet high.

There were no men on the ground when the parachutes were dropped but, by means of signal flags attached to the packages, the supplies were collected after they had rested for from sixteen to forty-six days on the ground.

## Ipiutak Art



American Museum of Natural History

## Handicraft of Lost Civilization

Upper: An ivory seal carved by prehistoric people of the Arctic, whose dwellings have recently been excavated and explored by natural scientists of the American Museum of Natural History. Its unique art distinguishes the lost Ipiutak culture from previously known Eskimo people. Lower: Snow goggles found in excavations show that Ipiutak people protected their eyes from snow blindness as the Eskimos have done for centuries. However, Ipiutak goggles are distinguishable by elaborate designs cut on the surface.

## New Facts on Lost Civilization In Alaska Reported by Worker

NEW YORK, Sept. 29—Further information about the lost civilization discovered at Point Hope, Alaska, last year was reported Sept. 20 by Dr. Harry L. Shapiro, Associate Curator of Physical Anthropology of the American Museum of Natural History, on his return after a summer's work at this site.

His report throws added light on the discoveries made in 1939 and 1940 by an American Museum-University of Alaska expedition under the direction of Dr. Froelich G. Rainey, which located the vast remains of a prehistoric town on the ancient migration route from Asia to America. Differences in the color of the vegetation disclosed five long avenues of approximately 600 buried dwellings that probably housed 3,000 persons on the barren gravel spit of Point Hope, 130 miles above the Arctic Circle.

Subsequent excavations near the ruins uncovered remains and implements very different from those of the prehistoric and present-day Eskimo tribes of that region. This ancient culture has been labeled "Ipiutak" from the Eskimo name of a small spit of land near the site.

Among the most interesting

finds were implements of ivory, fantastically carved; arrow heads, fine flint tools, needles and other artifacts of daily living. The carvings and implements made by these people were sufficiently different from the known Eskimo cultures to encourage the American Museum in a further search to trace the origin of the unknown race.

The principal objective of Dr. Shapiro's investigations this summer was to find traces of the Ipiutaks as well as of the more recent Eskimo tribes and to study the living populations of Point Hope.

## Whale for Christmas Party

BARROW, Alaska (UP)—Come Christmas, everyone, native and white alike, has a whale of a good time, for the Rev. Fred Klerekooper, Presbyterian missionary, and his wife see to it. Each Summer the Klerekopers and all others who help in the annual Summer whale kills get their share. But the Klerekopers get fed up quickly on whale steaks, whale stew, whale hash, whale soup and cold whale tidbits. At Christmas they throw open their storehouse and the frozen whale is distributed among holiday celebrants.

## ALASKA FORCE TO GET TWO-COLOR SKI SUITS

## Design Is Considered to Be Improvement on Finnish

WASHINGTON (Science Service)—When Winter comes, Uncle Sam's Alaska defense force will have a chance to try out brand new equipment, designed to make American ski troops hard to see and ready for anything in the far northern fields.

Two-way ski suits, green outside and white inside or vice versa, are an American improvement on cloaks and hoods of snowy white that turned Finns into phantoms in Winter fighting. The American reversible uniforms, in War Department estimation, will place the Alaska defense force among the best equipped snow troops in the world. The green-white outfits are believed unique.

Camouflage, wind resistance and warmth are the three main requisites of ski uniforms which the U. S. Quartermaster Corps has taken into account, but the ski outfit is also water repellent.

Also especially designed for American ski troops is a miniature stove weighing less than three pounds, tough enough to stand being hurled across a room and capable of burning gasoline, kerosene, or alcohol. It provides warmth or a means of cooking food in an emergency, and a pint of fuel is enough to cook one soldier's meals for ten days.

Protection against cold as severe as 40 below zero is provided in a special sleeping bag for the troops in Alaska. Keeping the weight of the three-layer bag down to less than eleven pounds, the Quartermaster Corps figures that it can be carried in a soldier's knapsack. A canopy attached to the bag, to protect the sleeper's head at night, becomes the carrying case for the bag by day.

## ARCTIC REINDEER THRIVE

## Transplanted Herd Healthier Than Domestic Cattle

INDIANAPOLIS (Science Service)—Reindeer in the Canadian Arctic, transplanted a few years ago from the Alaskan herds, are much healthier than stabled domestic cattle and they are thriving and multiplying at a great rate. Dr. Seymour Hadwen of the Ontario Research Foundation told members of the American Veterinary Medical Association at their annual meeting here.

Tuberculosis and contagious abortion, twin plagues of cattle in civilized countries, do not trouble the reindeer, Dr. Hadwen stated. Average age at mating for does is two years, though some large and rapidly developing individuals mate when they are one year old. In a well-managed herd on a good range a herd doubles in three years.



## STRESSES ALASKA AS DEFENSE LINK

### Gruening's Annual Report Cites Strategic Importance of Army, Navy, Air Bases

WASHINGTON, Dec. 16—Alaska has not only paid off the original purchase price of \$7,200,000 more than 300 times since its acquisition in 1867, but is now declaring "extra dividends" of vital military protection to the United States, Ernest Gruening, Governor of the Territory of Alaska, told Secretary Ickes today in submitting his annual report.

Strategically, Alaska is assuming world-wide importance by the establishment of supply depots and Army and Navy bases within the territory's 584,000 square miles, Governor Gruening said. Construction of major airports at many strategic points is under way, the Governor added. There are, he continued, 155 airfields in Alaska today.

An Alaskan trunk highway will have been established when the connecting link between the Richardson Highway and the Anchorage network of roads has been completed, Governor Gruening reported. He added that the nucleus of the Alaska National Guard has been established by the organization of four companies of soldiers.

#### Prosperity Is Reported at Peak

Defense projects in Alaska last year, which the Governor declared marked "only the beginning," added materially to the territory's prosperity, which he said reached an all-time peak during the year.

Mining, fishing and other Alaskan productive activities yielded nearly ten times the original purchase cost in the last fiscal year alone, the Governor continued. This contribution to the nation's wealth, he added, has been maintained as a yearly average for the last five years.

The population of Alaska is estimated to be 80,000, an increase of 35 per cent over 1930. Prospects for continued growth and prosperity are "better than they have ever been" according to Governor Gruening.

Governor Gruening complained,

### The Polar Times

Published June and December by the AMERICAN POLAR SOCIETY, Care American Museum of Natural History, Central Park West at 77th Street, New York, N. Y.

AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published January and July by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

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## SKULLS USED AS CUPS

### Hrdlicka Says Early Alaskans Followed Old Custom

WASHINGTON (Science Service)—News comes from the Smithsonian Institution that early America's cannibals way up North drank from human skulls, real ones. There was no drinking cup shortage.

New examples of these macabre cups, found by Dr. Ales Hrdlicka of the Smithsonian staff at prehistoric village sites on Kodiak Island, Alaska, are described in a publication on recent excavations, just issued. Dr. Hrdlicka suggests that skulls of brave enemies may have been valued as cups through the belief that a beverage in such a cup would transmit valor.

The practice of drinking from skulls was once widely followed over the world, and some prehistoric peoples of North and South America, as well as Europe, did this.

Studying bones of the pre-Koniags, as Dr. Hrdlicka has named the very ancient Kodiak Islanders, the anthropologist says that they had very little disease, no dental decay, fewer broken bones than moderns have, and their main disease curse was senile arthritis. Their medicine men did primitive surgery of boring holes through the skull and, from skulls discovered, it appears that they reserved this operation for women.

however, that "uncontrolled absenteeism" prevented a reform in Alaska's tax system which he termed "obsolete and inadequate." The Territory's natural resources, he added, are being "stripped from it with wholly inadequate return for the great riches extracted."

#### Minerals at \$28,470,000

The production of minerals from Alaska mines in 1940 was valued at \$28,470,000, which represented an increase of 12½ per cent over 1939. An all-time record, surpassing even "the boom days" of the gold rush to Alaska, was recorded with the mining of \$26,178,000 worth of gold.

The total value of Alaska fishery products was \$36,440,660, a decrease of \$3,663,833 over the preceding year. Led by muskrat and mink, 546,295 pelts valued at \$1,944,719 were taken.

The great future forest industry of Alaska, according to Governor Gruening, is the manufacture of pulp and paper, particularly newsprint paper. He estimated that Alaska forests are capable of producing 1,000,000 tons of newsprint annually in perpetuity, or more than a fourth of the present total requirements of the United States.

There is no public debt in Alaska and the close of the fiscal year, the Governor reported, found the territorial treasury with a net cash balance of \$637,436.91.

#### Rymill Joins Australian Navy

CANBERRA, Australia, Nov. 30 (Australian Associated Press)—John Rymill, noted explorer of Australia, Greenland and the Arctic, has joined the Australian Navy.

## ARMY WORK DEFIES RIGORS OF ALASKA

### Engineer Corps Makes Speed in Task of Creating New Outposts of Defense

WASHINGTON, Dec. 6.—Despite cold, inadequate transportation facilities and formidable surface obstacles, the Army corps of engineers is speedily building America's defense outposts in Alaska. Roads, landing fields, dock facilities and modern Army posts are appearing.

Temperatures range as low as 50 degrees below zero. High winds often make unloading of materials from ships extremely dangerous. In the coastal regions of Western and Southwestern Alaska sudden high winds known as "willawaws" present a serious hazard to flying, shipping and other operations. These disturbances, which are more frequent from October to March, are usually of short duration but violent.

At Fairbanks the sun shines less than eight hours a day for three and a half months a year and at times there is daylight for only 3 hours. Workmen must race darkness.

Engineering problems of all kinds arise continually in the Alaska activities. At one site the soil is permanently frozen down to bed rock. The topsoil, even in Summer, thaws to a depth of not more than twenty-four inches. Building foundations must be placed on permanently frozen ground.

Extreme temperatures make it necessary to thaw almost all construction materials and coal thawing sheds are needed for central heating plants. Tunnels, called utiladors, must be built to inclose water, sewage, power and heating lines to prevent freezing.

In some parts of Alaska a ground substance, called muskeg, complicates construction work. This material, sometimes fifteen feet thick, is a vegetable growth which ranges from a substance resembling peat at the base to a spongelike living vegetation at the surface. Embedded in it are logs, branches and other substances. Walking on it requires much exertion. Wherever the surface is broken it will not support a man's weight.

Equipment and materials can be moved over muskeg only by use of trestles and special mats of corduroy roads.

All muskeg must be removed before any airfield runway construction can be undertaken. After grading for the foundation a rock-base bill is usually required. Added to the problem of muskeg is the heavy rainfall encountered in many places—150 inches a year—five times the United States average. This produces lakes, ponds and quagmires after muskeg is removed.

Vast distances and difficult travel conditions complicate con-

struction problems. Nome, for example, is 2,500 miles from Seattle, or the equivalent of a trip from Washington, D. C., to Phoenix, Ariz. Under average ship speeds, with no intermediate stops, the journey takes about ten days.

Some Alaska harbors are open as little as five months a year and material requirements must be carefully estimated to utilize the period when the harbors are open. Supervisory personnel trips to many of the projects are made by air, always with the risk of becoming weather-bound. It is necessary to move supplies inland by comparatively slow water transportation and by both water and rail to some projects.

If special equipment or an extra part is suddenly needed it is necessary to radio the District Office. Delivery sometimes requires ten days.

The Army has two solutions for the spare part problem. One is to have on hand generous supplies of all parts that may be expected to need replacement. In some cases the supplies of spare parts for equipment in rigorous service are a substantial portion of the total equipment cost. The other solution is ingenious improvisations and temporary field repairs.

There is always a difficulty in obtaining skilled personnel. Many men hesitate to take jobs in Alaska because of the high cost of living, the climate and the scarcity of family housing facilities. It has been necessary to supply housing and recreation facilities.

However, as each new problem arises, the Army engineers find a way to meet it or get around it—and construction goes on at a rapid pace. In many instances where skilled civilian labor was difficult to get and construction could not be delayed engineer troops undertook the entire job.

## Hotter Weather, More Ice, Say Scientists

It often is popularly assumed that the great ice sheets which covered large areas of the northern United States during the last glacial period must have been due to a decline in temperature—for ice and snow are naturally associated with cold.

The British meteorologist, Sir George Simpson, and Dr. Knöche of the Argentine Weather Bureau have advanced a contrary and seemingly quite paradoxical explanation—that ice ages may be due to a rise in temperature.

This would cause more precipitation. In the Polar regions this would fall in the form of snow. The snow would pile up and become compacted into glacial ice. The glaciers would flow southward. There would be considerable melting each Summer, but never enough to overbalance the new ice arriving from the north.

By the same reasoning, an ice age would begin to decline as the earth grew cooler and precipitation decreased. The Summer melting in temperate climate would continue, perhaps at a slightly reduced rate, but the building up of new glacial ice would be reduced so as to more than counterbalance this slight loss.



# SPITSBERGEN'S OIL AND COAL BURNED IN RAID

London, Sept. 9 (AP).—Destruction of the Spitsbergen coal mines and the burning of great coal and oil reservoirs by Royal Canadian Engineers was confirmed tonight when British authorities, without explanation, lifted a ban against mentioning the extent of the demolition operations.

An eye-witness correspondent was permitted to report for the first time that five rich mining properties were rendered useless and that the torch was put to 400,000 tons of coal and 125,000 gallons of fuel oil.

The first announcement of the Spitsbergen foray had declared the prime aim of the venture was to keep the coal supply from covetous German hands.

It would take months to make the mines useful again and the Canadian forces leading the expedition removed millions of dollars worth of essential machinery.

One fuel dump, containing 75,000 gallons of oil, burned for four hours like a mighty blowtorch when the Canadians touched it off. The flames roared a mile above a fjord and drums were hurled into the sky like giant fireworks as they exploded.

LONDON, Sept. 9.—Members of the mixed force of British, Canadians and Norwegians who made the raid on Spitsbergen told how they had fired huge dumps of coal and wrecked mines to such an extent that they reckoned it would be years before the pits could be operated again.

Coal piles containing hundreds of thousands of tons were covered with oil-soaked timbers and fired, and as the expedition departed, bringing back to Great Britain the island's Norwegian population, it was said the flames could be seen for miles at sea.

The principal effect of the raid is to leave Germany unable to operate the coal reserve, which might have supplied them with an additional 500,000 tons yearly, some of it a bituminous type capable of being transformed into a gasoline substitute as well as light and heavy oils. From coal also comes an important explosive ingredient, toluol.

LONDON, Sept. 11 (AP).—The Canadian-British-French Norwegian expeditionary force which landed recently at Spitsbergen, it is now disclosed, withdrew 2,000 Russian miners as well as the Norwegian population of about 1,000 persons.



Burning stores of oil on Spitzbergen

## Coup at Spitsbergen Recalls Early Mining by Boston Man

The Christian Science Monitor

BOSTON—The part that a Boston citizen, John Munroe Longyear, played in the development of coal mines in Spitsbergen is recalled by many New Englanders with the report that this archipelago had been occupied by British, Canadian and Norwegian troops in a drive for strategic military advantage in the Far North.

In regard to Mr. Longyear's mining ventures, there is a volume, "America in Spitsbergen," assembled by Nathan Haskell Dole from the papers, records and photographs that belonged to Mr. Longyear, which set forth a story of this mining enterprise that will ever remain a tribute to the triumph of American engineers struggling with forces in an untamed wilderness.

### Satisfactory Experiment

Mr. Longyear said in the foreword: "The enterprise of developing a new and practically unknown coal field within 800 miles of the North Pole, yet so inaccessible during the summer months and so readily worked during the long Arctic winter as to supply at least part of the demand of the Scandinavian countries and of Northwestern Russia, was an interesting and satisfactory experiment."

"Considered from a commercial standpoint it was disappointing but pioneers frequently meet with such eventualities. Our satisfaction was derived from the assurance that we had developed an important source of fuel supply for the benefit of mankind. This will

be the only matter of consequence in the future; the loss or gain to the original explorers is of small moment."

Turning back the pages of history to the last decade of the 19th century we find that time has softened the memory of many of the struggles, contentions and disappointments that attended this daring mining venture but the account has lost none of its interest and thrill.

### Vacation Trip

In the summer of 1901, Mr. Longyear and family, then of Marquette, Mich., were on their way to spend a vacation in Spitsbergen, noted for its cool climate tempered by the warm Gulf Stream. Spitsbergen was a great center of the whaling industry and for over 100 years had attracted the attention of European natural scientists who,

because of its comparative proximity to the North Pole and its open sea, used it as a base for operations to attain that elusive goal.

Recording his arrival, Mr. Longyear wrote in his diary: "About 9:30 land came in sight—steep, rocky crags and peaks, covered or streaked with snow. Heavy clouds hung over the sky and shrouded it. Veils of mist and rain drifted across the panorama driven by a bitter cold wind. It was a grandly desolate, sublime, weird landscape, utterly barren and unlike anything I had ever seen."

Mr. Longyear found out about the presence of coal at Advent Bay during this trip and returned the next year with his cousin, William D. Munroe, and a Norwegian, Olaus Jeldness, to explore the region for mining possibilities.

During the 36 hours of their stay at Advent Bay they managed to visit the various points where coal was indicated on the Norwegian maps. Some of them had been scarcely touched; in others considerable excavations had been made, but wherever there were dumps the pits were caved in and were covered with ice and debris. They were able, however, to take samples, and to make such rough calculations and surveys as the limited time permitted.

When Mr. Munroe returned to America he went to the Michigan School of Mines, where he had been a student and made analyses of the samples of coal which had been brought from Spitsbergen. The analyses were so satisfactory that Mr. Longyear and his associate, Frederick Ayer, entered into negotiations with the Trondhjem-Spitsbergen Kulkompagni for the purpose of taking over their claims to the lands where the coal was situated.

Thereafter followed an epic adventure of development, transportation and labor against the hardships of a frozen land which have carried down to the present day. Last year the last Longyear stocks in the mines were sold and their interest absolved.

In many ways the development of Spitsbergen's natural resources and the realization of its strategic importance have been held back for centuries by the same reason that Alaska's development was retarded. But as it is seen that a German occupation of this outpost of civilization would bring Adolf Hitler into a much better position to harass Russia's industrial cities, seaways and communications with Great Britain, it is certain that the Allies will keep a sharp watch over it.

While Spitsbergen is a fishing center its primary industrial value lies in its natural resources, which include iron, hornblende, asbestos, gypsum, coal, copper, and graphite. Coal is the most important resource and approximately 2,000 Russians and Norwegians mine over 500,000 tons annually near the shores of Ice Fjord.

Through the exigencies of war the world is coming to know the worth of this tiny northland whose value was sensed by enterprising miners 40 years ago.





## SPITSBERGEN SPLIT INTO MANY ISLANDS

Arctic Group Covers 25,000 Square Miles—Climate Milder Than Greenland

The occupation of Spitsbergen, the Norwegian, Arctic archipelago between Greenland and Franz Josef Land, gives the British an air and naval base within 400 miles of the coast of Norway, although it is one that much operate under very difficult conditions.

The archipelago consists of two large and many small islands north of Norway. Although it lies only 10 degrees from the North Pole, the climate is less severe in comparable parts of Greenland. It is somewhat milder than the location would indicate because of the North Atlantic drift.

It has a total area of 25,000 square miles. The larger islands are West Spitsbergen, 15,200 square miles, and North-East Land, 6,000 square miles.

The warm drift sends a branch to the western shores, leaving an open passage that permits navigation to the western coast during most months of the year. Pack ice prevents approach to most shores except during the Summer. The adjacent sea is shallow and ice accumulates readily; the fjords are too deep and ice-ridden for anchorage in Summer and are frozen from six to eight months in the year.

### Ample Sites for Air Bases

The terrain is rugged, affording no opportunity for agriculture. The sharp peaks from which it is named include Horn Sund Tind, 4,960 feet; Mount Monaco, 3,450 feet, and Mount Eidsvoll, 4,770 feet. But there are extensive plains, permanently frozen peat-floored bogs, swampy valleys frozen in Winter, and glassy and uncrevassed glacial reaches. Thus, although the surface everywhere is rough save on the hard, firm, raised beaches of fine stones or on the glacial ice, there are ample sites for the construction of air bases.

The coasts are uncharted or poorly charted. The North German Lloyd and other German lines ran tourist cruises to the archipelago even before the first World War. But during the Winter navigation is dangerous. This would limit its usefulness as a naval base.

Yet it could provide a valuable coaling station, for its coal resources, providing a good non-cooking steam coal, have been estimated at 8,750,000,000 tons, practically on a par with Spain and next in importance after Belgium.

Loading jetties are difficult to maintain. Inland transport has been by fjords in the Summer and by human pack train overland in the Winter. All food save supplementary game, chiefly birds, must be imported and in the Winter water must be obtained by melting snow and ice.

After the whale, the polar bear,

## Islands Dominate Traffic Lanes for British-Soviet Operations in Far North

By Earl Hanson

Explorer, Scientist and Author

The announcement of a raid on Spitsbergen by British, Canadian and Norwegian troops carries the war much farther north than it ever has been before. The settlements in which the raiders were interested lie 600 miles farther north, than the most northerly battlefields in the Russo-Finnish war, 500 miles farther than Point Barrow, Alaska, the northernmost point on the American continent, and 900 miles farther north than Reykjavik, Iceland. In the West only the northernmost tip of Greenland, and in the East only a few Soviet-held islands lie nearer the Pole.

Yet Spitsbergen's population was well above 2,000 white workers, with their families (there never have been any aborigines there); it has the world's farthest-north coal mines, now presumably destroyed by the expeditionary force and its rich fisheries have been famous for

the reindeer and the fox had been practically exterminated, Norwegian, Swedish, Russian, British, German and American interests turned to the development of the mineral resources. This was hindered because the archipelago was terra nullius until 1919. Then the Supreme Council conferred its sovereignty upon Norway.

Great Britain and the British Dominions, France, Italy, the United States, Japan, the Netherlands, Norway and Sweden signed the treaty. Germany was not a signatory.

It has practically no stable population. During 1937-38 2,653 persons wintered there.

centuries and for decades have been of great importance to Norway.

The largest of the Spitzbergen coal properties were developed and held by the Russians under long-term leases from the Norwegians to supply fuel for the Soviet Union's effective maritime operations in the Arctic. Later dispatches said the 2,000 Russian workers were taken off with the 700 Norwegians. We may be sure, in any event, that the operation was carried on with the consent of the Soviet Union; that it was in that sense a joint operation, and that, if it was merely a raid to destroy the mines, it was a far-northern extension of Premier Josef V. Stalin's scorched earth policy.

The port of Murmansk and the Murmansk railroad were developed in the World War to facilitate traffic between the British and their Russian allies. They can serve the same purpose today, and Spitzbergen occupies a strategic position opposite the sea approaches from Britain to such Soviet ports as Murmansk and Archangel.

What is not generally realized is that Soviet Russia, more than any other nation, has developed and used its Arctic; that the Russians for years have been sailing the Northeast Passage around Siberia with freight and naval ships; that this passage is an important link between European and Asiatic Russia; that the Soviets have built cities, airports, harbors, mines and agricultural stations in the Arctic, and that the new Arctic sea route, open from six weeks to three months a year, may gain tremendously in importance in the event that the Soviets have to retire their armies and their economy east of the Urals.

In many ways the development of Spitzbergen and the realization of its strategic importance have been held back for centuries by those same superstitions that have retarded Alaska and so many other parts of the Far North. Probably

discovered first in 1194 by Norwegians, and visited in 1596 by the Dutch, the islands were the scene of rich whaling operations in the sixteenth and seventeenth centuries. In the eighteenth century the English wanted to do something for Spitzbergen's more permanent development and colonization, but they couldn't get anybody to go there. They offered to prisoners in London jails a chance for a new start as Spitzbergen's colonists, but they begged to be allowed to stay in prison rather than be sent to so terrible a place. Coal mining was begun there in the nineteenth century by British, Norwegian, Dutch, American and Russian interests.

In 1913 Vilhjalmur Stefansson reported that a mine owner in Wales told him that Spitzbergen was destined to become one of the chief competitors, if not the chief competitor, of Wales in the coal markets of the world. After the World War the Norwegians and the British were the nations principally concerned in Spitzbergen. National rights had not yet been adjudicated. In 1920, however, Britain surrendered all her political rights in Spitzbergen to Norway.

## Norway Lays Plans For Restoration Of Spitsbergen Mines

LONDON, Dec. 17 (CP)—The Norwegian Government in London will establish a committee to draw up plans for restoration of the Spitsbergen coal mines "as soon as the circumstances of war permit."

The future of the mines destroyed was discussed at a meeting of the Norwegian State Council and it was decided that the new committee will take charge of the affairs of the companies controlling them for the duration.



One of islands' chief coal workings, the Norske Kulfelter, on a hillside above Advent Bay



## GREENLAND RADIO IS SEIZED BY NAVY

WASHINGTON, Oct. 11.—A German radio station in Greenland has been discovered and "disposed of" by a United States naval vessel in the course of its regular patrol duties, it was announced by the Navy Department today. A small Norwegian steamer and her personnel of about twenty persons, who were supporting the station, are being brought to an American port "for examination."

The location of the station was not disclosed.

The text of the Navy Department statement follows:

"While on its regular patrol in Greenland waters during September a United States naval vessel encountered and inspected a small Norwegian steamer of about sixty tons.

"Examination of the personnel on board revealed that the vessel and her company of about twenty had been dispatched to Greenland under the auspices of the Nazi authorities in Norway to establish a radio station from which were to be sent to the German authorities weather reports and other military information.

"A search of the Greenland coast brought to light a radio station manned by an agent of the German Gestapo and two other Norwegians, all of whom had been disembarked from the Norwegian vessel previous to her discovery by the United States Navy craft.

"All the radio, equipment and supplies established ashore by this German-sponsored expedition have been disposed of and the personnel evacuated from Greenland by the United States naval vessel.

"The (Norwegian) vessel and her personnel are now being brought to a United States port for examination."

Germany has evinced keen interest repeatedly in Greenland, because of its strategic location near the North Atlantic ship lanes between the United States and the British Isles and its importance in forecasting weather in Europe.

The Navy has had much of Greenland under close aerial and sea observation since last April.

Food, fuel and other stores for patrolling aircraft and surface ships have been built up, but there has been no disclosure of fortifications at any point.

The coast is pierced by scores of isolated fjords, and harbors about The east coast is subject to pack ice which makes navigation hazardous, so that most of the island's activity is confined to the south-west coast. Frequent fogs add to the perils of navigation.

Greenland is about 700 miles from Newfoundland where large

## SAGA OF THE COAST GUARD'S BEAR

A SHIP with the most colorful career in this country's naval history bobbed up in the news again recently when the old Coast Guard cutter Bear steamed into Boston harbor escorting the tiny Norwegian freighter Busko. The Busko had been seized off Greenland after discovery that it was carrying radio supplies to a Nazi sending station on the Greenland coast, a station that was destroyed.

The Bear is built of wood, but she has outlasted many a steel or iron sailing ship built since she was put overboard in 1874. And in her wanderings she has plowed through ice in the Arctic and the Antarctic, has sailed the Atlantic and the Pacific and has covered more than 1,000,000 miles in her boisterous and adventurous career. As a matter of fact, the Bear is unique in United States naval history; she has been carrying on usefully long after being condemned to the boneyard. She just won't quit.

Her career as a government vessel started accidentally. Originally she was built for the Newfoundland seal trade, her sides three feet thick, sheathed on the outside with iron bark, made to crush through the heavy floes that come down from the Greenland coast carrying the seals and their white-coated young. When she was launched in Dundee, Scotland, she was an auxiliary steam barkentine, 200 feet long,

naval and army air bases are being sped to completion, and some 1,775 miles from New York.

BOSTON, Oct. 14.—A dirty, weather-worn Norwegian vessel, which was seized by the United States Navy off Greenland, where naval men charged it had been used by a German Gestapo agent for setting up a secret wireless station, was brought into Boston today with her crew of about 20.

A patrol vessel of the North Atlantic Navy command captured the 60-ton, ketch-rigged auxiliary ship, which bore the name Busko and, carried the Norwegian colors atop her mast and painted on her sides.

Placed in charge of a prize crew of 10, it was conveyed to Boston by the former Byrd Antarctic Expedition flagship Bear, now a naval vessel, and the crew, reported to include a woman and a boy, was turned over to immigration authorities.

BOSTON, Nov. 19 (P).—The majority of the crew of the Norwegian trawler Busko, seized by the Navy off Greenland and brought here Oct. 14, have been released during the last few days, immigration authorities disclosed today. A few, the number withheld, still are detained for investigation, they said.



The Bear as she appeared when fitted out for Antarctic waters.

with a thirty-two-foot beam, and of about 700 tons. A stout-hearted ship.

THE Bear might have remained a sealer all her days, until superseded by one of the large steamships now used in the seal trade, if Lieutenant A. W. Greely, leading a United States Government exploring expedition, had not been lost in the northern mists somewhere along the Ellsmere Land coast. He had led an expedition planned to take part in scientific observations that extended all around the polar basin. Some excellent work was done, and Brig. Gen. David L. Brainard, who is the only survivor of the expedition, then a sergeant, reached 83 degrees, 24 minutes north, the farthest north at the time.

Greely started out in 1881. After two expeditions had failed to find him and his men, another went out in 1884 in command of Lieut. Comdr. W. S. Schley. One

### ARMY TAKES A SCHOONER

Northern Light, Built for John Borden, Leaves Boston

BOSTON, Oct. 29 (P).—The Army took over the Boston pilot schooner, Northern Light, today for use on an unannounced mission. She was taken immediately to a shipyard for refitting.

The 247-ton Northern Light, 120 feet long, was built for John Borden, Chicago milk magnate, who used it for Arctic expeditions out of San Francisco. In 1927 he took eight Chicago Sea Scouts on a journey to collect arctic fauna, for the Field Museum.

His sister, Mrs. Joyce Borden Balokovic, wife of the noted violinist, bought the craft and in July, 1932, completed a 35,000-mile round-the-world cruise with her husband. They sold the ship after the trip.

of his three ships was the Bear, which had been bought by the government for \$100,000. She was the first through the ice, and it was her cutter that finally found Greely and six other survivors at Cape Sabine in Ellsmere Land on June 22, 1884. They were living on shrimp, lichens and seaweed, and about the only man able to move was Brainard. The Bear brought back the bodies of those who had been partly buried near by.

That action definitely put the Bear in the government service, and she was sent up to Alaskan waters to guard the seal rookeries against poachers and to do rescue work in those dangerous, ice-filled waters.

MOST famous exploit in which the Bear figured off Alaska, however, was in 1897, when eight whalers were caught in the ice off Point Barrow, on the Arctic Ocean. There were 265 men on the ships in a place that had been a graveyard of whalers. The Bear set out from Seattle in November, late in the year, to tackle the ice, and by Dec. 16 reached Cape Vancouver, on the Bering Sea 1,200 miles from Point Barrow. Three officers, Lieutenants David Jarvis and Ellsworth Berthoff, and Dr. Samuel Call, went ashore there.

They marched across frozen tundra and mountains, stopping at times to buy reindeer, which they drove before them, and reached the whalers in 120 days. The reindeer saved the whalers, and in the Spring, when the ice opened, the Bear went on and picked up the stranded crews.

The famous old ship was decommissioned in 1928 by the Coast Guard as superannuated, and for a time was used as a marine museum by the city of Oakland, Calif. Then she was bought by Rear Admiral Richard E. Byrd, renamed the Bear of Oakland, and made a part of his second Antarctic expedition. That she was still seaworthy and capable of smacking the ice mighty blows was proved many times during that expedition.

Two years ago she was turned over to the government by Admiral Byrd, and she was again commissioned as the Bear. That is how she got up north again, not far from the scene of her first triumph, poking into Greenland's icy waters and picking up a Nazi interloper. And, as far as those on the Bear are concerned, she can go on forever. R. O.



## CARL O. PETERSEN, SERVED WITH BYRD

Radio Engineer, Film Expert  
Went to Admiral's Rescue  
at Hut in Antarctica

PORTLAND, Me., Nov. 11.—Lieutenant Carl O. Petersen, of the United States Navy, who was a member of two Byrd Antarctic expeditions and received two decorations for valor, died yesterday afternoon in the Marine Hospital of heart disease. He was forty-four years old. He was communications officer on the aircraft carrier Ranger and was hospitalized on Sunday after being stricken while on board the vessel.

### Served First Expedition

A tall, fearless, experienced polar explorer, Lieutenant Petersen acted as one of the radio-operators of the first Byrd expedition to Antarctica in 1928-30 and as a radio operator and camera man with the second Byrd Antarctic expedition in 1933-35. For his exploits, which included flights with the expedition's leader over perilous icy wastes during snowstorms, camping with Bernt Balchen, pilot, as Little America's "first settlers," and participation in the first ascent of the Edsel Ford Mountains in the Antarctic, he received notable awards.

Of him Admiral Byrd wrote, in 1931, as follows:

"Carl Petersen was one of the ablest and most valuable members of our expedition to the South Pole. I consider him one of my very best friends. I cannot speak too highly of him. He is loyal, able, efficient and industrious. For particular duties of the expedition I am sure we could not have found a better man. His outstanding characteristic is his fine sense of loyalty, one of the prime requisites of a good citizen."

Lieutenant Petersen was born in Borre, Norway, on July 14, 1897. He attended grammar and high schools and an aviation school, served in the Norwegian Army and served in 1921-22 at Kings Bay, Spitsbergen, where he assisted in meteorological observations for Roald Amundsen. In 1923 he was wireless operator on a Norwegian whaling vessel in the Antarctic.

### Sergeant in Air Corps

He came to this country in 1926 and served for a time thereafter as a sergeant in the 319th Attack Group, United States Army Air Corps. His home before the First Byrd South Pole Expedition was in Chicago. Later he lived in Queens and after that in Freeport, L. I.

Late in 1928 Lieutenant Petersen sent to THE NEW YORK TIMES the first radio message from Antarctica.

When, in 1929, Admiral Byrd returned temporarily to his ship after choosing his Little America base site, Lieutenant Petersen and Mr. Balchen remained at the new base as first settlers, living in a small



CARL O. PETERSEN

tent. In a few days many other members of the expedition joined them, bringing with them the expedition's dogs. In 1929 also Lieutenant Petersen was radio operator of a dog-sled expedition which went about seventy-five miles south of Little America.

He was a participant in the setting of a world's record in radio and aviation on Jan. 25, 1929, when the expedition's airplane, the Stars and Stripes, in a flight 3,000 feet over the Bay of Whales, conducted two-way communications direct with THE NEW YORK TIMES radio station in Times Square, 10,000 miles distant. Lieutenant Petersen, then on the steamer City of New York, base ship of the first expedition, called THE TIMES on a thirty-four meter wave length, reporting that Malcolm P. Hanson, radio chief of the expedition, would make a test flight in the plane in a short time. "Listen in and try to hear the plane," said the Petersen message. THE TIMES operator listened, sent a message to Mr. Hanson and received one from him. It was the first time that a flying plane had sent and received messages over such a long distance.

### Atlantic Flight Thwarted

In 1932 Lieutenant Petersen and Thor Solberg nose-dived into Newfoundland waters in an unsuccessful effort to fly the Atlantic. They were not injured.

On the second Byrd expedition Lieutenant Petersen again distinguished himself. He was a member of the first expedition to leave the base camp in Little America to try to reach the hut in which the admiral had secluded himself and become ill. Lieutenant Petersen, with John L. Herrmann, both employed by Paramount Pictures, made a moving picture record of the second expedition amounting to 150,000 feet of film. When cut and arranged the films were released in 1935 under the title "Little America." The picture received warm critical praise.

The first Marconi Memorial Gold Medal for Valor established by the Veteran Wireless Operators Association went to him in 1938. In

1930 the same association had presented to him a testimonial for his work with Byrd. From the Navy he received, in 1937, the Distinguished Flying Cross for "great coolness and courage" as a radio operator with the second expedition. He also received twice, for his work with Byrd, the Congressional Medal of Honor.

### Polar Society Officer

Lieutenant Petersen was vice president and a charter member of the American Polar Society.

Before and after the second Byrd expedition Lieutenant Petersen was employed here by Paramount News as a photographic technician. Shortly after his return from the second expedition he became a lieutenant in the United States Naval Reserve. For several years he headed in Nassau County, Long Island, the Third Division, United States Naval Communication Reserve. He had become a citizen of the United States in 1932.

A year ago Lieutenant Petersen left his work with Paramount News to enter active naval service.

Besides his daughter, he leaves a widow, Mrs. Hjordis Petersen, who had joined him recently in Portland.

WASHINGTON, Nov. 15—

Members of two Byrd Antarctic expeditions attended the funeral of Lt. Carl Oscar Peterson, U. S. N. R., yesterday at Arlington National Cemetery.

Rites were held with full military honors and were in charge of Comdr. William H. Rafferty, Chaplain Corps.

### ALEXANDER ALLEN

Alaskan Gold Miner Was Noted  
as Dog Team Driver

SAN FRANCISCO, Dec. 2.—Alexander (Scotty) Allen, Alaskan gold-miner and dog team driver, died here yesterday.

After participating in the gold rushes of 1898 and 1900, Mr. Allen gained fame as the driver of fast dog-teams across the snow country. He took many of his dogs to France during the last war, where they served "with distinction."

Recently Mr. Allen had operated a dog-food business here.

Surviving are his children, Fay and George.

### COMDR. HOWARD EMERY

LACONIA, N. H., Dec. 30 (AP)—Commander Howard Emery, U. S. Coast Guard, retired, died today at the home of his grandniece, Mrs. Earle E. Bates, at the age of 88. He was born in Buckfield, Me. He commanded the Bear in a voyage from the Great Lakes, through the St. Lawrence to the Straits of Magellan, and through the Pacific to Alaska. He formerly was an inspector of lighthouses on the Pacific Coast.

Commander Emery served with the United States Navy in the World War before retiring on Oct. 3, 1917, his sixty-fourth birthday. He received a Victory Medal for his war services.



Captain Joseph R. Stenhouse

### SHACKLETON AIDE MISSING

Capt. J. R. Stenhouse Commanded  
Explorer's Ship in 1914-16

LONDON, Oct. 31.—Captain Joseph Russell Stenhouse, who commanded Sir Ernest Shackleton's ship Aurora on his South Pole expedition in 1914-16, was today reported missing while serving with the Royal Naval Volunteer Reserve in the Middle East.

The ship on which he was sailing was lost in the Red Sea some time last month and nothing has been heard of him since.

Captain Stenhouse was the holder of the Distinguished Service Order and the Distinguished Service Cross. He commanded mystery ships during the World War.

### DR. OLE A. BRANFLADT

Used Dog Team and Airplane to  
Visit Patients in Alaska

FAIRBANKS, Alaska, Nov. 23 (AP)—Dr. Ole A. Branfladt, Alaska's far-flying dentist, died yesterday at the age of 54. Using dog teams and later airplanes, he visited virtually every village on Alaska's northern coast and made long trips to isolated trappers' cabins and Eskimo huts to visit patients.

Dr. Branfladt was born in Minnesota and was a graduate of Luther College, Decorah, Iowa.

### Tablet Honors Yukon Pioneers

OTTAWA—Early Klondike days in the Canadian Yukon are recalled by Canada's most northerly historic site, a bronze tablet at the entrance to the Administration Building in Dawson City, Yukon. Erected some years ago by the Department of Mines and Resources, this memorial tablet pays perpetual tribute to the memory of the hardy pioneers whose determination and courage gave vast riches to the world.



## Pearls New Export of Arctic Following Find by Eskimos

OTTAWA, Oct. 17 (CP)—Pearls are new exports of Canada's Arctic, Maj. D. L. McKeand, Superintendent of the Eastern Arctic in the Northwest Territories Administration, said following his return from the annual 12,000-mile patrol in the mail ship Nascopie.

The first pearl reported in Hudson Bay was given to Capt. T. F. Smellie, Nascopie skipper, by a native several years ago, and during the 1941 voyage Captain Smellie had told passengers at the luncheon table of an Eskimo shyly coming to him with a small cloth bundle which contained the pearl.

Later in the same day, Major McKeand went ashore at Cape Smith, Northern Hudson Bay, and a native carrying a small bundle walked alongside him. An interpreter explained to the Government officer that the Eskimo had something he wished to show him.

Smiling broadly, the Eskimo opened his little bundle and in the folds of the cloth lay two pearls, one black, one white.

The pearls were found in shells by the natives, who gladly exchanged them for something of more use to them. With their realization that white men are interested in the small "stones" the appearance of further pearls is expected.

Major McKeand said that the Eskimo watches carefully the white man's interest and tries to collect things which will appeal to him.

The major said the patrol this year had the extraordinary experience of seeing a school of killer whales, foes of sea life in the north,

playing around the Nascopie, diving underneath it on one side and coming up on the other.

The knowledge of syllabic writing is spreading fast among the Eskimos, Major McKeand said, their understanding being assisted by the distribution of thousands of cards bearing such writing and which are eagerly studied by the natives. This year census enumerators are distributing identity disks among the natives and each disk bears the syllabic mark of the wearer so that he can be identified wherever he may go.

Major McKeand's patrol this year was his tenth. He said the health condition of the natives was good and at most points the fur catch was good during the past season.

## Priest Returns With Rare North Specimens

Father Dutilly Went To 18 Stations During 8,000-Mile Tour

WASHINGTON, Nov. 23

Completing his 10th scientific expedition into the Canadian Arctic region in quest of plants, minerals, fossils, etc., native of that area, the Rev. Father Arthème Dutilly, research associate in botany at Catholic University, has returned to Washington with a variety of rare botanical and geological specimens.

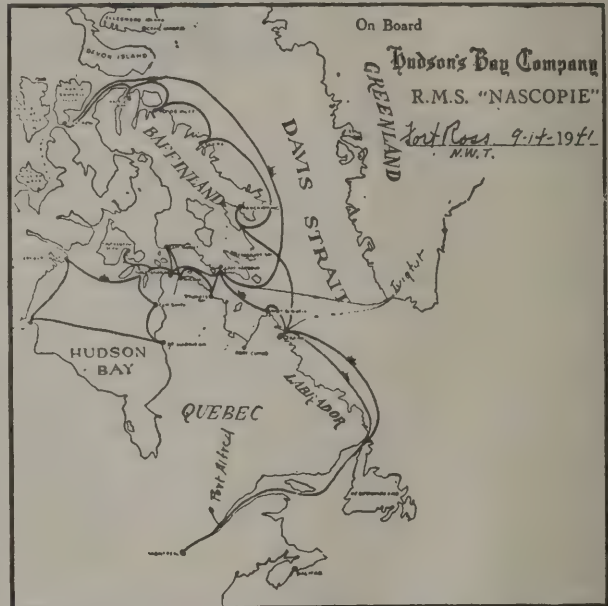
Leaving the United States last July, Father Dutilly spent four months in exploratory work in the Eastern Canadian Arctic, covering 8,000 miles by schooner, motor boat and steamship. He touched at 18 stations on the Hudson Bay shores, Chesterfield Inlet, Hudson Strait, Baffin Island, Somerset Island and Greenland to gather specimens in his study of the habitat of the Eskimo. Father Dutilly began these yearly expeditions in the Arctic region in 1933 and has now conducted explorations in 165 separate stations, traversing a total of 75,000 miles by land, water and air transport in the eight years in which he has been engaged in this scientific enterprise.

### Materials for Museums.

This year's expedition resulted in a large accumulation of data of the frozen north by the priest-naturalist. He brought back to the university upward of 2,000 sheets of Arctic plants; a quantity of rocks and other geological specimens; an assortment of Arctic Birds' eggs; portions of Eskimo Food; and samples of parasites from dogs, salmon, trout and other fish native to the region. This scientifically valuable material will be classified by specialists in the various fields concerned for ultimate deposit in the Arctic Institute, established at the university, and for distribution to institutions of higher learning in the Scandinavian countries and added to the Vatican Museum, the National Museum at Ottawa and to scientific



The Nascopie in an ice field.



Letterhead of R. M. S. Nascopie, showing route to North West Territory

## Letters Bear Postmark Of Northernmost Office

### Hudson's Bay Ship Passenger Sends Arctic Souvenirs

The Hudson's Bay Company's Royal Mail ship Nascopie returned Oct. 12 from a four-month trip to the Arctic, during which food, mail and supplies were delivered to isolated settlements throughout northern Canada. When it reached Montreal it brought a few parcels of mail and a cargo of cryolite, taken aboard at Ivigtut, Greenland.

Although this ship is principally a service vessel, W. J. Eck, a stamp collector from Washington, obtained accommodations as a passenger and accompanied it on its cruise to the Northwest Territory. While the ship was at Fort Ross, N. W. T., Mr. Eck posted a few letters which received the postmark of this northernmost American postoffice and the handstamp of the Nascopie, which is one of the eastern Arctic patrol.

The envelope and the letterhead make valuable philatelic souvenirs, as they represent mail that has come over an unusual route from one of the world's most remote settlements.

The Nascopie's cruise was to have reached Craig Harbor, but that port was eliminated, as only two whites and a few Eskimos live there now,

collections in various government departments in Washington.

Many of the specimens will also be useful in the studies now in progress at the university by Dr. Hugh O'Neill, curator of the Langlois Herbarium, and Drs. Reinhard, Von Brand, Braugart and O'Brien of the Department of Biology, who are specializing in research and scientific inquiries pertaining to the Arctic region.

The results of Father Dutilly's yearly expeditions to the Arctic, with those of Dr. O'Neill and the Rev. Maximilian G. Duman, O. S. B., of the faculty of St. Vincent's College at Latrobe, Pa., who were members of the Catholic University group who visited the region in 1939, have been published in articles entitled "Flora Arctica," "The Genus Carex in Eastern Arctic Canada" and "New Species of Carex and Notes of This Genus in Arctic America."

### Whale Sharks 'Armor-Clad'

Barring the internal parasites which it harbors, the whale shark has no enemies—it literally fears

nothing, reports the fish and wildlife bulletin. This may be due in part to its great size—up to sixty feet in length—and certainly to its tremendously thick skin—as much as four inches. It is virtually clad in armor, solid and resistant as a solid rubber truck tire. Harpoons usually bounce off; or, if embedded, bend and pull out of this sea monster's hide.

## Admiral Byrd Returns To Active Duty

New Britain, Conn., Dec. 10 (A. P.).—Rear Admiral Richard E. Byrd, arctic and antarctic explorer, is returning to active duty with the navy today.

## Canada Moves Reindeer Herd

OTTAWA, Dec. 12 (CP).—Canada's main reindeer herd has been moved to the inland winter range on the government reindeer station near Aklavik, Northwest Territories, the Resources Department said today,



# American Arctic Is Becoming Aerial Crossroads of the World

## War Developing for Planes the Northwest Passage That Sea Explorers Sought in Vain; Shortest Route to Orient and Russia Is Via Arctic

By Richard Finnie

Author of "Lure of the North"

The real key to the Northwest Passage to the Orient, which explorers sought for four centuries in vain, was created with the invention of the airplane, and by 1929, when the first airplane roared down the Mackenzie River to the Arctic Ocean, the Northwest Passage could have been traversed readily, and it soon was. Two years later Colonel and Mrs. Lindbergh flew from New York to Tokio via Hudson Bay, the Mackenzie delta and Alaska. But it has taken the war to create the facilities that will put the Northwest Passage into every-day peace-time use.

Across its nine provinces Canada now has a string of more than 100 airports for the Royal Canadian Air Force, with many more being developed. In addition there are bases in Newfoundland and others along the coast of Labrador, and from Alberta and British Columbia there are landing fields reaching into the Yukon and Alaska. In between, in the million-square-mile Northwest Territories lying above the provinces, planes equipped in summer with pontoons and in winter with skis may land on and take off from any one of the myriad lakes and rivers, or the Arctic Ocean.

With the completion of the Labrador bases, short-range fighter planes may be ferried via Greenland and Iceland, to Great Britain. On the other side of the continent, fighter planes may be sent by way of Bering Strait and Siberia to Russia. In event of war with Japan, the northwestern bases will assume vital importance. Plans also are being made for a defense highway through northern British Columbia and the Yukon to Alaska.

### Air Crossroads of World

Canada's Northwest Territories—a region of incalculable natural resources—was until recently nothing more than a name synonymous with ice and snow to the people of Canada. Today the Northwest Territories is producing more gold than fur, its petroleum and water power are being used, and soon its vast reserves of copper and other base metals may be tapped. Its greatest significance, however, for Canada and the United States is its development as the future aerial crossroads of the world.

The shortest way from Chicago to Calcutta is north; the shortest way from San Francisco to London is across the Arctic prairies, Hudson Bay and Baffin Island; while from New York to Tokio or Vladivostok, the short route is via Hudson Bay, the Mackenzie delta and Alaska. All of these routes pass over the Northwest Territories. (The present bases in northwest Canada, lying in primarily with Yukon and Alaska transportation and defense, do not touch the territories; but even by these it would be 3,000 miles shorter from New York to Hongkong than the 11,000-mile route now followed by Pan-American clippers by way of San Francisco.)

The Germans never have overlooked the strategic potentialities of the Northwest Territories, any more than they have overlooked those of Alaska, Greenland and Iceland. German publications in the field of military geopolitics long have discussed the strategic importance of Iceland, Greenland and the Arctic approaches to the North American Continent and the problem of warfare in the Arctic. At least in theory—although it would be extremely difficult now—the Nazis could establish bases secretly, depositing supplies by air and submarine, on uninhabited Arctic islands in the Northwest Territories and launch a surprise attack on Canada and the United States.

The advance of aviation in northern Canada, though stepped up by the war, has not occurred overnight. Air transport in the Northwest Territories was commonplace to trappers, traders and prospectors in the days when most people in southern Canada and the United States still thought of flying as a hazardous adventure.

As early as 1917, a lone explorer seated himself on the tundra of Melville Island and wrote a letter to the then Prime Minister of Canada, Sir Robert Borden, urging him to have his government study the possibilities for Arctic air routes. That explorer was Vilhjalmur Stefansson, who five years later established himself as the foremost prophet of polar development with the publication of his "The Northward Course of Em-

pire." In that book he made predictions, then ridiculed as fantastic, that are coming true today, and not the least remarkable were those concerning the Northwest Territories as the aerial crossroads of the world.

Among his supporters in the Canadian civil service was J. A. Wilson, director of air services in the Department of Transport at Ottawa, who is largely responsible for construction of the new airfields between Edmonton, Alta., and the Yukon. On his recommendation, R. A. Logan, an aviator and surveyor, made in the summer of 1922 a reconnaissance of Baffin, Devon and Ellesmere Islands, where he selected airport sites.

### Air Development Retarded

Wilson was eager to have Logan sent back to the eastern Arctic the following year, accompanied by an adequately equipped staff, to resume his investigations. But the plan was opposed by the late Major General Sir James MacBrien, who was commander in chief of the Canadian Army and air force. General MacBrien saw it as a waste of time and money, and Wilson was forced to abandon the scheme. The result was that while aviation soon began to develop in the more accessible Mackenzie district of the Northwest Territories, it was held back in the eastern Arctic and sub-Arctic for almost twenty years. Until recently, little flying had been done around Hudson Bay, Baffin Island or the islands beyond.

Ironically, General MacBrien eventually became an enthusiastic air traveler and acquired the reputation of being one of the prime supporters of aviation in Canada. Logan now is director of intelligence for the R. C. A. F. after a long period of service with Pan American Airways.

In 1934 Grant McConachie, young aviator who had been making a living flying frozen fish from northern lakes to railroad sidings in Alberta and Saskatchewan, found a backer, A. J. Nesbitt, of Montreal, and

bought several planes to start an air service from Edmonton to the Yukon. Wilson marked McConachie as an up-and-coming man and worth an investment. He obtained a mail contract for the new company, which began operating in 1937. Today the Yukon Southern, with McConachie still at the controls, has become an important link in Trans-Canada Air Lines and is financed largely by the Canadian Pacific Railway. And McConachie's Yukon Southern has been the backlog in the chain of defense bases to Alaska.

### Bases Have Lasting Value

Unlike many a costly war-time project, these far-flung landing fields being hacked out of the wilderness will have enduring value. They will fulfill the Northwest Passage dream and help to open up rich, unexploited areas. The Peace River country, in the upper half of Alberta and British Columbia, which for many years has produced prize-winning wheat, still is popularly regarded as remote, although it is connected by railroad with Edmonton. Three hundred miles northwest of the Peace River settlements is the valley of the Liard River, which rises in the Yukon, swings down through the top of British Columbia and empties into the mighty Mackenzie in the Northwest Territories. Here is an untapped area of possible agricultural value as well as mineral wealth, over which commercial and military planes are passing daily.

All of this country in time will become settled and productive. And its scenery, when either the British Columbia or the prairie highway to Alaska is built, will be admired by tourists on the ground as well as in the air.

## Arctic Indians Give \$432

OTTAWA, Nov. 11 (CP)—The Crow Indians who live north of the Arctic Circle in Yukon Territory near the Alaska boundary have sent to Resources Minister Thomas A. Crerar \$432 for the relief of bombed-out children in the United Kingdom.

Dollars come hard to the Crow Indians, so this gift meant much to them. Indians rarely live as far north as the Arctic Circle, usually considered Eskimo territory, but Crow Indians have hunted and trapped along the Crow River for generations.

This summer they took their catch of last winter to a trader in Alaska, and were paid in United States dollars. Then Chief Moses, who had been told of the bombings in London, took up a collection in the band. He headed the list with \$100 and some 24 Indians made up the balance.

The Chief tied the bills in a red cotton handkerchief and turned it over to the Royal Canadian Mounted Police at Old Crow Station. The Mounties sent the money to Dawson, and there it was deposited in a bank and a check forwarded to Ottawa.

"Mr. Crerar will turn the funds over to the British High Commissioner's office here.

## Planes Based on Hudson Bay Could Threaten Heart of U. S.

DETROIT, Dec. 20.—With enemy planes reported over Pacific coast cities and practice air-raid alarms along the Atlantic seaboard, little public attention has been paid to another coastline menacingly near the heart of America's war industry.

Hudson Bay, almost as large as the Mediterranean, cuts so deeply into the interior of the continent that its shore is only two hours by bombing plane from the Soo locks, in northern Michigan, principal point of the shipping lifeline on the Great Lakes. Churchill, Man., a world port on Hudson Bay, is as far west as Des Moines, Iowa.

A ship carrying planes into Hudson Bay could send them out to attack manufacturing centers from St. Louis to Boston. Air raiders, if not intercepted, could drop bombs on Chicago, Detroit, Cleveland and Buffalo four or five hours after taking off, or appear behind the coastal defenses of New York City an hour later.

Although winter will close the Soo locks within a few days, it will not eliminate the possibility of attack by an invader from the north. In winter there is drifting ice in Hudson Strait, which lies in about the

same latitude as Anchorage, Alaska, but men who have navigated these waters say that the strait does not freeze over and that the harbor of Churchill, on the western shore of Hudson Bay is ice free.

Aviators who have flown over thousands of square miles of tundra, rock and forest between Davis Strait and Lake Superior assert that invading planes, skirting Atlantic coast defenses, could establish a base even without a supply ship. The ferrying of gasoline to isolated caches in the Canadian North was a common peace-time practice.

In northern Canada, regarded as one likely point of entry for enemy air raiders flying the top-of-the-world route, there are many hundreds of "eyes and ears," including Royal Canadian Mounted Police patrols, Hudson's Bay Company employees, forest rangers and bush pilots, all linked to Ottawa by short-wave radio. Defense authorities do not preclude the possibility of one-way flights of big bombers from Nazi bases in Norway or from Japan over the Alaska panhandle. A. R. P. officials think that any raid on this continent would likely be made with incendiaries, rather than high explosives.



## Arctic Expedition Brings Back Data On Radio Waves

Louise A. Boyd Party's  
Successful Trip Praised  
By Head of U. S. Bureau

WASHINGTON, Nov. 28

The Louise A. Boyd Arctic expedition has brought back from Greenland, Baffin Land and Labrador scientific data of value to the radio research work of the Bureau of Standards, the Commerce Department announced today.

The expedition sailed from Washington June 11 and returned on the ship *Effe M. Morrissey* early in November. In addition to Miss Boyd, the party included A. S. Taylor and F. R. Gracely of the Bureau of Standards, a radio operator detailed by the Coast Guard; a physician, Capt. Robert A. Bartlett, and a crew of 11. The ship sailed up the west coast of Greenland and down the coast of Baffin Land and Labrador.

Principal object of the expedition was to get data on radio wave propagation. Indirect evidence had indicated that radio transmission conditions in the Arctic differ considerably from those elsewhere. The expedition, the department pointed out, was successful in obtaining the desired data.

The expedition carried magnetic measurement equipment, lent for the purpose by the Carnegie Institution of Washington. Valuable information was obtained on magnetism on the aurora, the effects of which are closely related to magnetism and to radio transmission. Continuous measurements also were made on ultraviolet light intensity.

"The Government is indebted to Miss Boyd for her effective leadership of the expedition and is grateful for the results achieved," Dr. Lyman J. Briggs, director of the Bureau of Standards, said.

Miss Boyd, whose home is in San Rafael, Calif., has had long experience as an Arctic explorer, and is carried on the rolls of the bureau as a special consultant. She directed and financed the expedition.

## Calls Jan Mayen of Value Against Nazis and to Fuel Archangel Ferry Planes

Washington, Dec. 3 (A. P.).

The establishment of a new United States air base on the Arctic island of Jan Mayen in the far North Atlantic was proposed today to checkmate any German attempts to set up bases on the east coast of Greenland.

The strategic advantages of occupying Jan Mayen were discussed in an article published in the semi-official periodical, *United States Naval Institute Proceedings*.

The little Norwegian island is located in the Greenland Sea north-east of Iceland and about half way between that North Atlantic out-

post and Spitzbergen, so that in addition to serving as an air patrol base, it might also constitute a refueling base for ferrying planes to Archangel, Russia.

The article was written by J. Raymond Dyer, an airlines attorney, Arctic traveler and student of naval affairs. He said that Jan Mayen, which he described as having an excellent natural airport, would be available to this country through agreement with the anti-Nazi Nor-

wegian government-in-exile.

The Nazis have a thorough scientific knowledge of the east coast of Greenland, Mr. Dyer said, and bases undoubtedly will be established there in deep, protected fjords "as the battle of the North Atlantic grows hotter." This could be done, he wrote, despite the fact that American bases have been set up on the southern part of the island, which has been taken under United States protection.

Mr. Dyer argued that the best way to make such Nazi bases largely ineffective would be to establish airplane patrols out of Jan Mayen over the area through which Nazi supply ships from conquered Norway would have to pass.

Jan Mayen, discovered by Henrik Hudson in 1607, once was a whaling center, but since has returned to desolate wasteland. About 20 years ago Norway set up a weather station there.

## Navy Keeps Friendly Eye on Baffin Land



## American Patrol Combines Work and Play

Upper: An Army lieutenant (upper left) and a Navy lieutenant (center) joined in an Eskimo kayak race during a recent visit of a United States naval patrol vessel to Lake Harbor, Baffin Land, Canada. The Americans frequently fraternize with the Eskimos, although neither understands the speech of the other. Lower: The Hudson Bay Company's post at Lake Harbor as viewed from a patrol vessel. Baffin Land is 200 miles west of Greenland and is one of the stations under the protection of the United States Navy patrolling the sea lanes of the North Atlantic.



# Seattle-Archangel Ship Route Proposed For Aid to Russia

## 'Top of World' Line Held Practicable by Embassy Bulletin

A route across the "top of the world"—from Seattle, around Alaska, through Bering Strait and the Arctic Ocean to Archangel—was projected by the Soviet Embassy Sept. 20 as one of five practicable routes for ships taking American military supplies to Russia.

"No German U-boat bases are located along this sea way," an Embassy information bulletin pointed out in extolling the value of the recently developed "Soviet Northern Sea route."

It also emphasized that ships taking the little-known Arctic route would pass through no territorial waters but those of the United States and Russia, and would have to travel only half as far as those using the much-discussed routes via either the Atlantic or Pacific to Iran, from where goods would have to be trans-shipped 1,000 miles, across Iran to reach the Red armies.

### Two Usual Routes.

The usual route for ships going from this country directly to a Soviet port is either from New York across the North Atlantic—infested by German raiders—to Murmansk or Archangel, or from San Francisco, across the Pacific, to Vladivostok. To reach the latter Siberian port, ships have to go through waters Japan claims as her territorial waters, and the Japanese have complained about the use of this route for shipping to Russia supplies that are embargoed to Japan.

Commercial transport over the Soviet Northern Sea route began only in 1934, the Embassy said, after the Soviet icebreaker Sibiryakov made the first trip across the Arctic Ocean in a single navigating season in 1932.

The route, as it has been used, takes ships from Archangel or Murmansk across the Arctic Ocean and down through the Bering Strait and the northern Pacific to Vladivostok. A look at an atlas shows that it would be as easy to use Seattle as Vladivostok for the terminus at this end.

Use of ice-breakers to "convoy" the merchant ships is the Soviet's secret for conquering the Arctic. "Dozens of ships make the passage every winter, cutting the sea time from Murmansk to Vladivostok in half and tapping the rich interior of Siberia through ports at the mouths of the great Ob, Yenisei and Lena Rivers," the Embassy bulletin said.

### Follow Regular Schedule.

"These ships, ordinary freighters," it added, "go through on regular schedule, knowing in advance what conditions they will meet, with no fear of hardships greater than normal on any shipping route. Gone are the days when ships were caught between two drifting floes and sent to the bottom. The last such case was that of the Chelyuskin in 1934.

Its whole crew of 104 was saved by Soviet planes.

Navigation in the Arctic requires a special technique. Each group of ships is preceded by a powerful ice-breaker which clears the way through the ice for the whole convoy. Wherever the ice is particularly heavy, the ice-breaker leads each ship separately through the difficult spot, sometimes taking the ship in tow. . . .

"In the first years of the operation of the Northern Sea Route there were cases of ships stranded for the winter. These were ships that had strayed from the caravan or had ventured too far north unaccompanied. They were released by powerful ice-breakers the following summer."

The Soviet also has developed an extensive Arctic meteorological service, using observers stationed on remote islands as well as airplanes to provide forecasts of the weather and the type and location of ice formations.

July, August, September, these are the three months of navigable season in the Soviet Arctic; in some parts of it, especially the Barents Sea, the season may begin earlier, and extend until mid-October, but the entire passage from West to East, or vice-versa usually can only be made during these three months.

### No Longer Impassable

No longer is the Arctic the impassable barrier to inter-oceanic communications which it used to be. The famous Northeast passage which daring explorers attempted in vain to force many times in past centuries is now an accomplished fact. Not only as a feat of scientific exploration, but as a regular route for shipping. For quite a few years now, Soviet vessels—both merchantmen and warships—have plied between the oceans along this all-Russian waterway.

Here are a few of the landmarks in this gradual conquest of the Arctic. In 1878-79, the Swedish explorer Adolf Erik Nordenskjöld

## Soviet Ship at Seattle; Crossed 'Top of World'

By The Associated Press.

SEATTLE, Nov. 16—The Soviet Navy's icebreaker Krassin is docked here after a 10,000-mile voyage from the White Sea over the top of the world. Captain N. Markov said that she was brought to the United States for overhaul.

The Krassin was the first ship ever to negotiate the route, across the northern side of Siberia and down through the Bering Sea. That was in 1930. The route has been open intermittently since about 1935.

Captain Markov declared that he had no fear of interference from any other navy on his journey.

"We can hide in the ice, if nothing else," he said, "and there isn't a warship commander afloat who would follow us in. You see the ice is our friend."

was the first to make the passage, but it took him 13 months to go from Gothenburg to the Bering Strait; nearly three-fourths of this time he spent wintering, his ship, the S. S. Vega, being immobilized by the ice. The first man to make the passage in one season, without wintering, was Prof. Otto Julevich Schmidt, aboard the Soviet icebreaker Sibiryakov, who sailed, in 1932, from Archangel to the Bering Strait in two months and four days. Since then, summer navigation along the Northern sea-route has become a normal thing, with whole fleets traveling from the Atlantic to the Pacific. In some cases, even return-trips have been achieved in one single season.

Since the end of 1932 the Northern sea-route (as the Northeast Passage is usually called in Russia) has been under the administration

of an independent government department, the "Glavseморput," which is directly responsible to the Council of Peoples Commissars. This extraordinary pioneering concern, which has been likened to the East India Company, has under its exclusive jurisdiction an area of 10,000,000 square kilometers, including all of Siberia above the 62nd Northern parallel, in addition to the whole of waterways and islands in the Soviet Arctic.

During these nine years of operation the Glavseморput already has spent something like two billion dollars on an extensive program of development. All along the 18,750 miles of shoreline under its jurisdiction a complex network of polar and wireless stations, meteorological observation posts, lighthouses, beacons, fog-signals and navigation markers, repair and refueling stations, and other services have been set up. In close co-operation with this organization a far-flung system of Arctic airlines is now in operation; its three main branches follow the courses of the great Siberian rivers, Ob, Yenisei, and Lena, while a newly established East-West line connects all the major shore points.

As it is, navigation through the Northeast Passage depends entirely on the guidance and advice of some 80 wireless stations on Novaya Zemlya, Severnaya Zemlya, Cape Chelyuskin, Wrangel Island, and many other points, which send out weather reports four times a day. In co-operation with these, specially trained air-scouts flying ahead of the ships map out a safe route through drifting ice floes and other obstacles, while powerful ice-breakers stand by to clear a passage through blocked areas.

## GLACIER 'SCORCHED' EARTH

### Took Along Vegetation and the Soil as Well

BOSTON (Science Service)—On the "scorched earth policy," the glaciers which invaded North America a million years before the birth of Christ could teach even the Russians a thing or two, according to a report by Professor R. F. Flint of Yale University to the Geological Society of America here.

"Whereas the Soviets burn the standing crops on the rich soils of Russia, the great ice fields took along the soil itself down to bed rock," Professor Flint said. He described the first glacial map of North America, a cooperative scientific venture directed by twelve American geologists and four Canadians. Each inch on the map represents sixty miles and the vast area covered by the finished map will require seven feet from North to South.

### Antarctic Dog Prized

RAVENNA, Ohio (UP)—The most distinguished dog in Ravenna right now is Admiral, a Siberian husky, born on the ice at the bottom of the world with the Byrd Antarctic expedition. The dog is owned by Dr. Earl C. Wright.



Map of Arctic waterway from Murmansk to Vladivostok by way of the Bering Strait



## CURATOR ROY RECOUNTS HIS EXPERIENCES IN THE ARCTIC

Latest addition to Field Museum's Geology Memoirs is *The Upper Ordovician Fauna of Frobisher Bay, Baffin Land*, by Dr. Sharat Kumar Roy, Curator of Geology.

Unlike most technical publications this quarto-size volume of 212 pages is partly devoted to a lively account of the day-by-day doings of the members of the Frederick H. Rawson Expedition to Labrador and Baffin Land. Although the expedition conducted its work during the fifteen months beginning in June, 1927, this book is the first detailed narrative to be published. Other duties prevented Dr. Roy from preparing his manuscript earlier.

## MOSQUITOES WORST PEST OF FAR NORTH

The average stay-at-home reader's concepts of the hardships of Arctic exploration are apt to receive a startling jolt from the following paragraph in Dr. Roy's book:

"At dawn on July 8, Battle Harbor, Labrador, was sighted. We steamed past it and anchored in Assizes Bay. Now, for the first time, we encountered the dreaded mosquitoes and black flies! It is well to emphasize here that they are far more formidable a menace than is usually believed. Although we were equipped with the best-known protections against these horrible pests, none proved equal to the situation. Of the two evils of the North—mosquitoes and flies in summer and bitter cold in winter—the latter is by far the more bearable."

It may be noted, in passing, that Dr. Roy is a native of India, accustomed to a semi-tropical climate. So far as is known, he is the only East Indian ever to have gone into the Arctic regions.

## DOUBT CAST ON "VIKING RUINS"

On Sculpin (or Kanaiotok) island, supposed Viking ruins were investigated. "It is commonly believed that this island was settled by Norsemen some 900 years ago and that the ruins found there might be Norse," writes Dr. Roy. "A survey of the ruins and examinations of the artifacts, however, led our anthropologist, Dr. William Duncan Strong, to conclude that the site represents an early Eskimo spring or autumn camp of the Thule culture."

On arrival in Anaktalak Bay the expedition

made first contact with the Naskapi Indians. "Rarely, in North America today, can one get the thrill that comes with the first sight of a Naskapi, for the Naskapi are truly wild, Indians, living by the hunt as their ancestors did before them. From Northwest River to Ungava Bay... is an unexplored area of 300,000 square miles entirely unoccupied save by one hundred Indians.... The lot of a Naskapi is not a happy one.... On snowshoes, the hunter wanders day after day on the lookout for such caribou as the Caribou God may send in answer to his prayers.... When the caribou are not to be found, the Indians starve; often the men drop in their tracks."

The expedition retraced the course of Sir Martin Frobisher, first explorer of the American Arctic, who made three voyages between 1576 and 1578 under the patronage of Queen Elizabeth. Frobisher took back to England hundreds of tons of rock which he and his companions supposed to be gold ore, but which turned out to be worthless. At Kodlunarn Island, where Frobisher planned a colony, the Museum party found house ruins, mining trenches, water reservoirs, and fragments of supplies.

Among the natural phenomena which Dr. Roy observed are the movement by ice expansion of great boulders weighing many tons, and lakes domed with ice to twenty feet or more above their summer water levels.

"A constant topic of conversation during the winter in Labrador is that of the 'drift.' The term 'drift,' as used by the natives, is not what we generally call snowdrift but is a living, moving mass of powdery snow dust that has been picked up and carried along by the wind. Very often it reaches a height of ten feet or more. No one dares to go out into it, for to do so is almost certain suicide. Objects within arm's length cannot be seen. In it one loses all sense of direction; pathways that may be followed on the darkest night become strange and unfamiliar. When accompanied by a strong wind it cuts like a sand blast and facing it is all but impossible. The dust is so powdery that it enters the very smallest opening and packs solidly inside the clothes....

"Of all phenomena relating to ice and snow, the most interesting was the presence of fresh flowing water on the beaches and near-by areas at air temperature many degrees below freezing. This water is known locally as 'quor' water. What the term means is not known unless it be the degenerated form of the word 'queer,' but to find flowing water when even the swiftest brooks have frozen to a depth of a foot or more is perplexing.... Apparently, it is some form of seepage from considerable depth below the level of the frozen ground, where circulation of water is possible. Yet it is difficult to explain why the water should collect in streams and flow out on the accumulated ice without freezing....

"Although 'quor' water is a great blessing as a source of abundant drinking water, it is also a real menace. Because of the constant seepage, the snow is kept so mushy that it is extremely difficult, and often impossible, to walk along the beaches, where the 'quor' water seems to be more prevalent than elsewhere. Wet feet, when the temperature is around 30 degrees below zero, are likely to freeze without warning."

In the technical portion of the book, Dr. Roy gives scientific descriptions of hundreds of fossils he collected. Included among a number of new species are four which he named *Receptaculites fieldi*, *Weslenoceras greggi*, *Krausella rawsoni* and *Calymene macmillani* in honor respectively of Mr. Stanley Field, President of the Museum, Major Clifford C. Gregg, Director of the Museum, the late Frederick H. Rawson, Chicago banker who sponsored the expedition, and Commander Donald B. MacMillan who led the expedition.

In addition to Dr. Roy and Dr. Strong (the latter now a professor of anthropology at Columbia University), other members of the expedition were Mr. Alfred C. Weed, Curator of Fishes; Mr. Arthur G. Rueckert, Taxidermist; Mr. Joseph N. Field (son of President Stanley Field), then a young boy, now an ensign in the United States Navy and a Trustee of the Museum; and Mr. Kennett Rawson, son of the sponsor, who later served as navigator with Admiral Byrd in the Antarctic.

## New Denmark 20-Ore Marks Death of Bering

## Shows Ship in Which Explorer Made His Last Voyage

A new 20-ore, red-brown stamp issued by Denmark to commemorate the bi-centennial of Vitus Jonasson Bering's death was received here.

The vignette depicts a ship probably the St. Peter, in which Bering made his last voyage and reached Alaska from Asia. "Vitus Bering in Memoriam—1741, 1941-20 ore" is arranged across the top and "DANMARK" between two posthorns, is at the bottom.

Bering was born in 1681 and began a naval career early in life. He visited the East Indies and later joined the Russian Navy, serving in the war against Sweden. In 1724 Peter the Great of Russia appointed Bering to head an expedition to find a possible link between Asia and America. The trip was a failure,



but Bering later persuaded the Empress Catherine to finance another expedition and this time he completed the trip along the Aleutian Islands to Alaska. It was on the return from this voyage that Bering became ill and died in December, 1741, on an island named for him.

Denmark's Bering commemorative set includes 10-ore, violet, and 40-ore, blue, values, in addition to the 20-ore, brown.

## Men From 'North Country' to Build Greenland Base

MINNEAPOLIS, Sept. 17 (UP)—A stoic, hard-bitten group of nearly 200 men from the north country left home today for a year in Greenland.

The men, many of them awkward in their new store clothes; were hired by a New York contractor to build a \$20,000,000 United States air base "somewhere in Greenland." They will work all Winter in sub-zero weather, but they are used to that. That's why they were hired.

Most of them are Finns and Swedes; a few are Norwegians. All are skilled workers, from lumber camps, road gangs, machine shops, trucking crews, iron mines.

## Navy to Aid Archaeology

SEATTLE, Wash. (UP)—Even in the national defense emergency, science looks for new discoveries. Thirteenth Naval District headquarters ordered its workmen on Alaskan air bases to become archaeologists. The Smithsonian Institution asked that any relics of ancient civilizations that might be found, especially in the Aleutian Islands be sent to it.

## An Eskimo Idea.

Eskimo natives of Greenland long thought the important mineral, cryolite, was ice because it was white and melted on a candle flame.

THE Eskimos are such a peace-loving people that they do not even have a word for war in their language.



## GREENLAND HOLDS STRATEGIC VALUE

'World's Largest Island' Lies 700 Miles From Newfoundland and 1,775 From New York

Greenland, the only colonial possession of Denmark, has an area of 736,518 square miles, of which only 31,284 square miles are ice free. Of its population of about 17,000, five hundred are Danes and the rest Eskimos. West Greenland has a population of about 16,000 inhabitants, East Greenland has 1,000 inhabitants. For the first time in history the King of Denmark visited Greenland in 1921.

The history of Greenland goes back to the tenth century when the Norwegian, Gunnbjörn, found islands to the west of Iceland and may have seen the southeast coast of Greenland. In 982 the Norwegian, Eric the Red, sailed from Iceland to find Gunnbjörn's land, where he spent three years. He called the land Greenland to induce people to go there, and in 986 set out with twenty-four ships to found a colony. Of these fourteen reached Greenland.

Other settlers followed, developed farms, and at the height of their prosperity numbered 3,000. The sagas report that when the Norsemen went to Greenland they did not actually meet natives. When they went farther north somewhat later they met the Eskimo, who was probably migrating south at that time. Leif Ericson introduced Christianity at about 1000, and in 1126 Greenland got its first Bishop.

Until 1261 Greenland was a republic. Then the colonists swore allegiance to the King of Norway. At the dissolution of the union between Norway and Denmark in 1814, neither Greenland, Iceland nor the Faroes were mentioned and were therefore retained by Denmark.

### Shipping Restricted by War

Not until 1721 was the first modern settlements formed by the Norwegian missionary Hans Egede. Many of the eighteenth century colonists were convicts, but gradually the colony prospered, and in 1774 trade became a government monopoly. From 1807 to 1814 communications were cut off with Europe owing to the war, and a century later the World War again restricted shipping with Greenland.

Until 1917 Denmark's sovereignty extended only over the west coast and the one trading station of Angmagssalik in the east. In that year, however, it was extended to embrace the whole island, which led to a dispute with Norway regarding hunting and sealing rights on the east coast.

The "largest island in the world" (after the island continent of Australia) has, since the outbreak of the present European conflict, taken on new strategic importance. It lies about 700 air miles from the nearest point on British Newfoundland and between its southernmost tip and New York City is an airline distance of some 1,775 miles. From the neighboring Canadian island of Ellesmere, Greenland is but a short hop of twelve miles. The mouth of the Canadian St. Lawrence is little more than 1,000 miles away.

Bordered by abrupt rocky coasts, rising hundreds of feet out of the ocean. Greenland is an immense



Regular postage stamps and cancellations in use since 1938

"The Standard Postage Stamp Catalogue" and most American albums recognize only seven adhesives for the vast Danish colony of Greenland.

The recognized set of 1938 consists of the following denominations: 1 ore, olive-black; 5 ore, rose-lake; 7 ore, yellow-green; 10 ore, purple, and 15 ore, red, all of which portray King Christian X of Denmark, in the uniform of an admiral, against a background of mountains and glaciers. The last two denominations, the 30-ore, blue, and the 1-kroner, light brown, depict a polar bear standing on a floe with icebergs in the background. The entire series is inscribed "Grønland," the figure of value and "Kgl. Post," an abbreviation for the

plateau of an average elevation of 4,500 feet. The highest ice crossed by Koch was 9,000 feet, but a few rounded mountains exceed 10,000 feet. Fiords, often scores of miles inland, break the continuity of the coast line. The characteristic feature of Greenland is its inland ice, the most remarkable existent example in the Northern Hemisphere of ice-age conditions.

### Crossed by Expeditions

Numerous expeditions have been made across Greenland. The region above Melville Bay was visited by John Ross in 1818 and by Ingfield in 1852. Americans, Kane, Hayes, Hall, Greely and Peary have discovered most of this region. The latter reached the northern end of Greenland in 1901, possibly the most northerly land in the world. Crossings of the ice cap have been made by Nansen, Peary, Rasmussen, De Quervain and Koch.

In 1916, Peary strongly advocated that the United States purchase Greenland from Denmark. "Greenland in our hands," he wrote, "may be a valuable piece of our defense armor. In the hands of a hostile interest it could be a serious menace." In 1925, during the MacMillan expedition sponsored by the National Geographic Society with cooperation of the United States Navy, Lieut. Commander Richard E. Byrd flew over great stretches of Greenland's vast ice cap. He found that it would be difficult to land an airplane near its edge.

Human habitation is possible only along the rim of the open coast land. The capital of North Greenland is Godhavn on Disco Island, the most important settlement of the colony, and that of South Greenland, Godthaab. The administration is in the hands of the Greenland commission in Copenhagen, whose head, a director, is appointed by the crown. In turn, the latter appoints the two inspectors of North and South Greenland.

The industries of Greenland, principally confined to fishing and hunting, are almost exclusively in the hands of natives. The imports from Greenland into Denmark amounted in 1938 to 5,939,000 kroner, and the exports from Denmark into Greenland to 3,064,000 kroner.

Danish royal postal service.

By reason of its location and climatic conditions, which make ordinary communication and trade difficult, Greenland has remained isolated from world commerce. The postal service between Copenhagen and the various settlements on the huge island has been placed under the supervision of a government board, Styrelsen af Kolonierne i Grønland, in Copenhagen, and by officials living in Greenland.

Until 1938 all ordinary mail was carried free between the colony and Denmark.

### Norway's Nansen Stamps

Norway has issued a second semi-postal set in honor of Fridtjof Nansen, Arctic explorer, according to Bamberger's Stamp Center. The portrait of Nansen is the same as that used for the 1935 series, but the new design has been modified to include only an inscription of value and the words "Norge-Nasjonshjelpen" (Norway, National Relief). The values are 10 plus 10 ore, green; 15 plus 10 ore, brown; 20 plus 10 ore, red, and 30 plus 10 ore, blue.



## Research Ship Pictured Only on Falkland Stamp

### 6-Pence Value Honors Work of the Discovery II

Many types of ships have been pictured on postage stamps, but only the six-pence stamp of the Falkland Islands, issued in 1937, shows one specially outfitted for oceanographic research. The stamp has only the caption "R. R. S. Discovery II."

The Discovery II, a Royal Research Ship owned by the Falkland Islands government, was built in Glasgow in 1929 and specially designed for oceanographic study.



With a gross tonnage of 1,036 tons and a cruising range of 10,000 miles, the Discovery II has made extremely valuable studies of whales in relation to their distribution and movements in the South Atlantic Ocean.

The stamp also has a portrait of King George VI of England in the upper left corner and his imperial crown in the upper right corner.

### Spitsbergen in Stamps

Sept. 13  
Spitsbergen, Norway's Arctic island, which British, Canadian and Norwegian forces raided last week, has never had its own postal paper but it entered philately in 1925 when Norway issued a series of four stamps inscribed with the island's Norwegian name, Svalbard, in commemoration of its acquisition that year.

## Stamp Honors Grenfell's Work

MONTREAL — The memory of Sir Wilfred Grenfell, founder of the Grenfell Labrador Mission, has been honored by the issuing of a new five-cent stamp by the Newfoundland Government.

The stamp, printed in blue, shows Sir Wilfred standing hatless on the bridge of a ship looking out on a passing hospital ship. In the background may be seen a huge iceberg, common to those waters, while on the distant mainland may be seen a cross, symbolic of the missionary work he performed there.

Dr. Grenfell's work in Labrador on the upper tip of Newfoundland

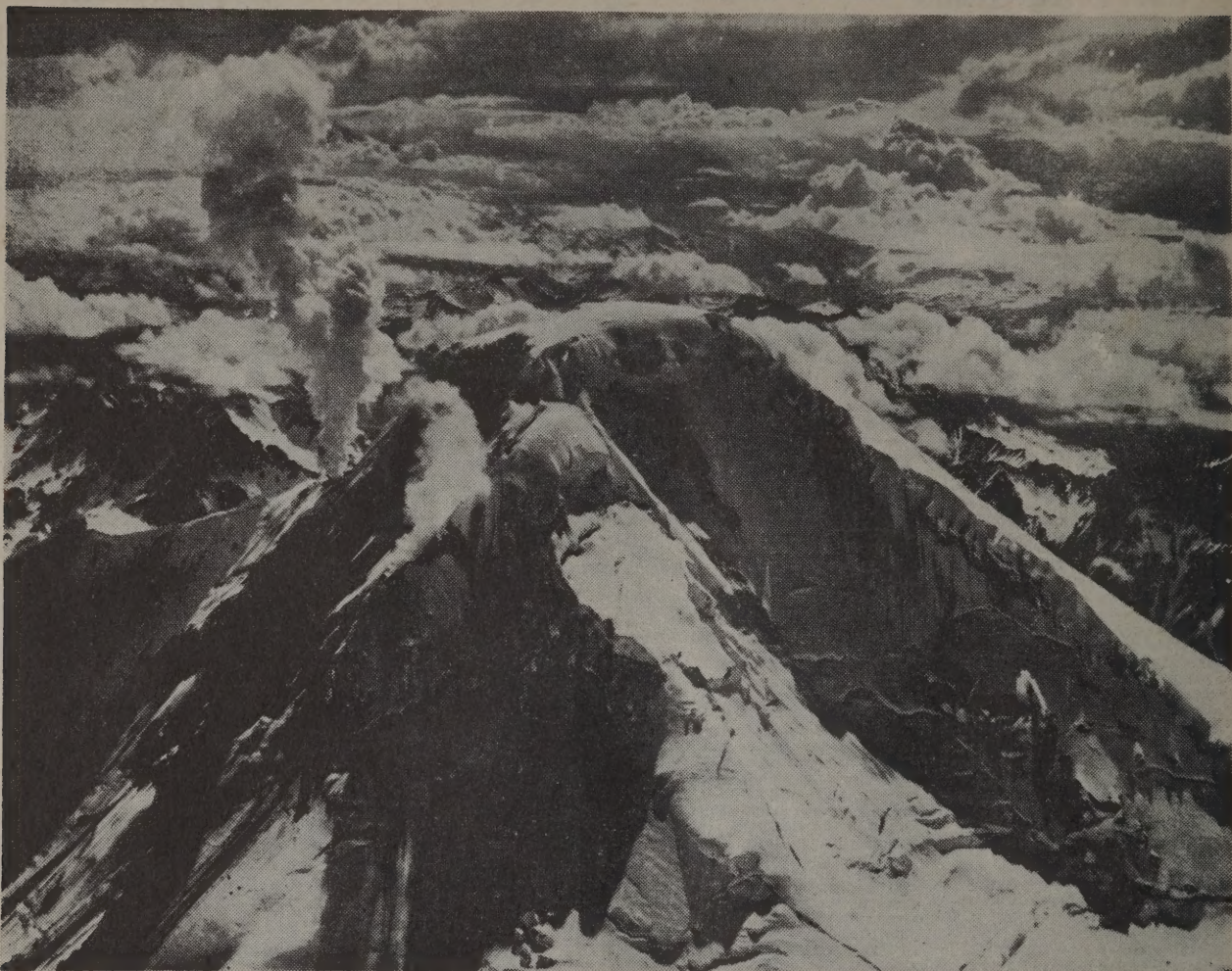


is being perpetuated by the International Grenfell Association. Work being carried on there is supported by the Royal National Mission to Deep Sea Fishermen, the Grenfell Association of Great Britain and Ireland, the Grenfell Association of Newfoundland, the Grenfell Association for New England, the Grenfell Association of America for the rest of the United States, and the Grenfell Labrador Medical Mission for Canada. These organizations and their branches raise funds, send quantities of useful clothing for distribution by the Mission stations on the coast to those who come to them in need, and carry forward in every way Sir Wilfred's life work.

Sir Wilfred was a pioneer and an adventurer, for Labrador when he came first in 1892 in the little ketch "Albert" needed help. He saw conditions of the fishfolk there, and decided to devote his life to the welfare of the people up and down the rugged coast.



## VOLCANO STIRS AMID THE SNOW-COVERED PEAKS OF ALASKA



Steam rising from Iliamna Volcano, as seen in mid-afternoon from a U. S. Army Air Corps plane flying at an altitude of 9,000 feet



With Greenland's icy mountains in the background, a United States Navy PBV patrol plane keeps watch along the inhospitable east coast of Greenland, now under United States protection